Virginia Medical Monthly

Official Publication of the Medical Society of Virginia

Vol. 68, No. 10.
WHOLE No. 1072.

RICHMOND, VA., OCTOBER, 1941

$2.00 A YEAR
25 CENTS A COPY

Guest Editorial

The Great Intruder

ALFRED FOURNIER, the great French syphilographer of the last century, spoke of syphilis as "the great imitator". This disease may involve any part of the body, producing the symptoms of many nonsyphilitic conditions such as cancer, pernicious anemia, ulcer, osteomyelitis and a number of dermatologic and neurologic maladies.

Fournier's dictum might likewise be applied to allergy. The differentiation between sinus disease, head colds and nasal allergy is often difficult. Allergic headache closely resembles headaches from other causes. Neuritis caused by angioneurotic edema of the nerve sheath is not uncommon. The differentiation between infantile seborrheic dermatitis and allergic eczema is sometimes impossible. Allergic infiltration of the lung may produce X-ray findings indistinguishable from pneumonic consolidation. Many a normal appendix has been removed because of abdominal allergy. Kidney colic may be caused by allergic edema of a ureter. There is a form of intermittent hydrarthrosis involving multiple small joints instead of single large joints, which closely resembles recurring subacute infectious arthritis. The outstanding difference is the nearly complete disappearance of subjective and objective signs between attacks. Foods may cause it.

Allergy might also be termed "the great intruder". The allergic reaction colors the picture of many nonallergic disturbances, either by exaggerating the usual symptoms or by modifying them, thereby increasing diagnostic difficulty.

Nasal allergy is a frequent concomitant of true sinus infection. In many cases this intruder prevents the rhinologist's obtaining good results by local treatment. Control of the associated nasal allergy often facilitates greater success with rhinologic methods.

Migraine is in a last analysis but a symptom. As brought out by Lennox in his recent volume, "Science and Seizures", certain persons seem predisposed to migraine, possibly on the basis of inheritance. Many factors such as fatigue, worry, constipation, may precipitate attacks. Sensitization to foods is so often an exciting factor that we have come to use the term "allergic migraine". If the allergic factor could be eliminated, there would still be migraine, but its frequency would be diminished.

Food allergy often intrudes in organic disease of the gastrointestinal tract. Many a patient with peptic ulcer, a nonallergic disease, has failed to respond to the usual Sippy diet, only to find himself allergic to milk. In such cases, changing to milk-free diet often gives relief. In the same way, food allergy may exaggerate symptoms caused by true cholecystitis. Patients with gallbladder disease often remark that specific foods such as cabbage, onion or melon must be avoided because they are apt to produce a gallbladder attack.

There are many causes of colitis. No matter what the specific etiology in a given case, if allergy intrudes, the latter must also be controlled for best results. Two recent reports by Andresen and Rowe describe cases of true ulcerative colitis in which relief was obtained only after allergic therapy.

Intrusion of allergic sensitization is probably the chief factor in the symptomatology of malaria. It has long been known that the injection of foreign protein into a sensitized animal may produce protein fever. As long as the plasmodium is growing within the erythrocytes, the body tissues are protected, but with its extrusion into the blood we witness the intrusion of the allergic factor manifested by protein fever.

There is yet another way in which allergy may intrude. Sensitization may interfere with the customary treatment of some nonallergic diseases. Treatment must then be readjusted. Food sensitization in peptic ulcer has been mentioned. The diabetic who becomes sensitized to insulin and the pernicious anemia patient allergic to liver extract present real problems. The man with tuberculosis, allergic to many foods, may require highly individualized treatment. Allergic principles would call for dietary restrictions while the infection requires a liberal diet. Many persons with chronic dermatoses become sensitized to constituents of their ointments. They wonder why the eczema, apparently healing nicely, suddenly becomes worse. Good dermatologists, aware of this, patch test their patients with new ointments or even with the old ones, before recommending their use.

After a patient has become sensitized to horse serum, the routine of serum therapy must be radically altered. Sensitization to drugs such as aspirin, quinine, the arsphenamines and the sulfonamids necessitates changes in treatment.

Allergy may indeed become an important interloper.

WARREN T. VAUGHAN.

Special Article

COMMENCEMENT ADDRESS—1842*

AUGUSTUS LOCKMAN WARNER, M.A., M.D.—1807-1847
Professor of Surgery and Dean, Medical College of Virginia.

EDITOR'S NOTE: This address, the only existing copy of which is in the Surgeon General's Library, is one of the very few examples of the writings of a remarkable young man—the genius behind the founding of the Medical College of Virginia and the pacemaker of medicine in this locality in his day. We have thought it worth reproducing in these columns.

GENTLEMEN:

You have been so cordially and eloquently welcomed to our plain fireside, that it would be affectation in me to attempt a repetition of it on this occasion.

Candour compels me to say, that I have been at a loss to select a theme which would interest or entertain you. If I should describe before you the tumultuous and boisterous political strife raging throughout our country, I should but disgust you with a display of the worst passions of our nature. Nor should I be more happy in the selection, if I should tell you of the ruin and despair which move like the burning sirocco over our fair land. These constitute a part of the politicians' duty, and to his hands we cheerfully resign them. To us belongs, what the thoughtless world would call a mere gloomy task, the investigation of the multiform ills to which our flesh is heir: for although our chiefest study is man, yet it is not gay and lightsome man; ruddy in health; buoyant in spirits—the admired leader of the Bacchanal riot, or the attractive centre of the social pleasures. But it is man bearing upon him the weight of the primitive curse; tortured by bodily suffering and disease, and fearfully gazing upon that moment in the future, which severs the dearest and most cherished ties. Gloomy indeed is this employment to him, who seeks his sole enjoyment in the sunshine of the fashionable world, or sports where ambition holds her court:—but to you, who have dedicated yourselves to a high and responsible profession, let me say, that dark and forbidding as are the portals of the Temple of Medical Science; yet within, there are many richly tessellated aisles,—its niches are decorated with the honored dead, and around its altar may be found a goodly portion of the wisdom, talent, and virtue of the age. Probationers at the threshold, you anxiously inquire what requisition will be made upon you, when the long wished-for hour shall arrive, that ushers you within its walls. At this season, whilst the paternal fireside which is yet passing vividly before your mind's eye, and the farewell which affection has so recently sounded in your ear, exert their mollifying influence on your hearts and prompt to noble and honorable resolves, I say at this season, it is peculiarly appropriate that your attention should be directed especially, to the object for which you will be temporarily alienated from those guardians, who have guided you from infancy to the threshold of mature life.

Young men!—has the question yet occurred to you,—why the frowning mountain which bounded your horizon from childhood, has gradually faded and is now lost in the distance?—Or why the wave which lashed the sands of your natal shore, no longer murmurs sweetly on your ear? Is it that you have come to join in the sports and giddy amusements of the metropolis?—Is it that you desire to learn how men exist when congregated? Or is it not rather that you are here to select the stores, and man your little bark for the voyage of life—a long and tempestuous voyage,—alternated by sunny days and clouded nights, and whose haven, though gilded with hope, lies far—far in the distance. A voyage safe only to him, who has sedulously and carefully provided for all emergencies;—for then he may grasp the helm with confidence, and launch forth upon the ocean, and with lightsome heart exclaim, with the fearless mariner,

"If a storm should come and awake the deep—
What matter! What matter! I can ride and sleep"—

The profession which you have adopted, having relations as extensive as the human family, attracted to it the attention of the philosopher and philanthropist, and how remotely it may date its origin is not revealed by faithful history;—for as the organization of man unerringly proclaims his proclivity to disease, and evidently nurses within

*Delivered before the students of the Medical Department of Hampden-Sydney College in Richmond, Virginia, Fall of 1842, and published at the request of his students.

itself the seed of its decay, it is rational to presume, that the first pang that agonized mortality prompted the hope, and probably fanned that hope into a conviction that for every pang there was an antidote. Fabulous history tells us, that Medicine reposed in the arms of Music, Poetry and Eloquence; thus Apollo, presiding over the Muses, claimed for himself the invention of Physic, Music, Poetry and Rhetoric—

"Mine is the invention of the charming lyre;
Sweet notes and heavenly numbers I inspire,
Sure is my bow, unerring is my dart,
But ah! more deadly his, who pierc'd my heart,
Med'cine is mine; what herbs and simples grow
In fields, in forests, all their powers I know
And am the great Physicians call'd below.

Dealing with the infirmities and ills incident to our nature, which of themselves were regarded as visitations upon man by an offended supernatural power, it was not remarkable that the whole range of the Therapeutic art was limited to charms, incantations and offerings of propitiation to an unseen and imaginary deity. Simple and rude as was this commencement of the healing art, it proclaimed for it is a high and distinguished destiny;—for admitting all disease to spring from an ever ruling and invisible agency, they who were presumed gifted with the mysteries of the healing power, were elevated to a commanding position, and maintained an ascendancy and control, awarded to none others. Thus humble and obscure as was its origin,—in the midst of superstition,—medicine engaged, at the earliest period of refinement, the attention and respect of the philosophers and sages, and at a very remote time, we find it intimately blended with all philosophical and literary pursuits. This intelligence must be gratifying to you, who are yet ignorant of the history of your art; for in these latter days—these boasted days of refinement and civilization, a daring effort is being made to degrade medicine, (justly entitled to the highest range amidst the sciences, from the accuracy of its principles, its vast and extended connections, and the brilliancy of its achievements) and by prostrating her, rank her amidst the chimeras and impostures of the age; for many there are, who claim to be among the most enlightened and refined, merely that they cannot appreciate the leading principles of the profession of medicine, denounce the whole as a system of empiricism, and madly throw themselves into the embraces of charlantry and artful cunning.

It is not my intention to dwell minutely upon the history of medicine, nor to occupy your time in a useless discussion upon its antiquity. Its origin was humble, its progress slow—its history chequered. At one time the tenant of the cloister, at another the pampered guest of the court.

The progress of refinement and letters favored its advance, and moving *pari passu* they ever appear on the page of history bound together by the closest chords of friendship. But like many early and cherished associations, the period arrives, when new desires and dissimilar pursuits rupture the bands, and medicine is seen stemming the torrent alone. It is now that her influence, her power, her beauty are disclosed, in her train of admirers are seen age and youth, talent and wealth, alike struggling for her favors. Old times have passed away. The fantastic dress, which the priest of Iris threw about her, although remodeled by the Benedictine Monk of Salerno, has been cast aside for the gorgeous purple and ermine, with which she was bedecked by royal hands. No longer she bathes her languid limbs in the mystic stream flowing by the portals of the Egyptian Temple,—or timidly hides herself behind the altar. Her gait is lofty, and she walks stately through the palace, or softly through the cot.

Cicero has said that in nothing do men so nearly resemble the gods, as in relieving the sufferings and infirmities of their fellows. Doubtless this sentiment meets a response in almost every human bosom,—for that heart must indeed be callous, that can gaze upon suffering unmoved. Yet how fruitful of evil may this sympathy become. To sympathize is indeed godlike, but if that sympathy beget rashness, how damning may be the result. From sympathy should flow the cultivation of the ability to relieve, and he who would desire to exercise this benign influence upon his fellow, should examine narrowly whether he is possessed of all the pre-requisites. It is this examination, which determines the line of demarkation between science and empiricism; without it the brazen impudence of the charlatan would remain unexposed, and his path, though spotted with blood, would be watered by the tears of gratitude. To you, young gentlemen, does this fact appeal most cogently,—for it matters not, whether he who professes the healing art, ignorant of its principles, is labeled Swaim's Panacea, Morrison's Pills, or holds in his

XUM

hand the parchment that proclaims him Doctor Medicini; he is still the empiric,—the brutal gamester, who scores his games with blood, and whose stake is human life. Behold then the inscription over the portal of the Temple of Medical Science.—"He who would be an accepted votary at this shrine, must consecrate himself, by unremitted toil." Do not infer, that I believe for a moment, that you have entered these halls with any other than the laudable desire of obtaining that knowledge upon which your professional reputation is hereafter to be based. But it is the error of youth to decorate the future in the richest and most attractive attire, and to pass heedlessly by the present. Tomorrow is ever the laboring day;—today is unimportant, because tomorrow promises to accomplish what today neglects. To warn you against this fatal procrastination, I have ventured to place before you the melancholy consequences. Of what the Science of Medicine now consists, it is not my province to tell. Other and abler hands will lead you through the vast stores which ages have accumulated,—will throw aside the rubbish and expose to you the pure building material, and eloquently describe the beautiful structure which is being completed. You will then wonder no longer, that centuries have passed since the foundation was laid, while you will be enraptured with the beauty of its proportions, the purity of the order, the richness of its decorations;—and you will be warmed into holy enthusiasm as you walk along its quiet and peaceful aisles, and by the softened light, shed by the setting sun of bygone days, behold the shades of Hippocrates, of Galen, of Boerhaave and of Harvey commingling with those of Rush, Shippen, Wistar and Physick; and hear their harmonious prayer for the well-being of all mankind, to the remotest generation.

The study of medicine at the present day is no pleasing and inviting task to the novitiate. His duty no longer consists in acquiring a general or superficial knowledge of the human structure, or memorizing a few established axioms. The day of theory has passed by, and although the cypress which hangs over the tomb of our undying Rush, is as verdant as when Apollo transformed Cyparissus, yet his theory is cherished only as an emblem of his genius;—and with the brilliant theories of Hoffman, Sahl, Cullen and Brown constitutes but an integrant part of that grand eclectic system, which proclaims this to be the utilitarian age.—Well may the bibliographist inscribe upon the title page of his work,—the Philosophy of Medicine.—A few isolated facts constituted the basis for an ingenious theory, and he who displayed most subtlety or acuteness of reasoning attracted most admirers. The medical world was marshalled under the standard of some favorite leader, and gallantly did they march to combat. The battle is not always to the strong, nor the race to the swift; and thus as you turn the pages of history you will find the poetic and fanciful theory of Stahl giving place to the more favored solidism of Hoffman; the brilliancy and splendor of Cullen is dimmed by the meteoric blaze of Brown, while the Western Star shines beautifully bright in the theory of Rush. Changes and threatened overthrow marked every page of history, and confusion, doubt and fearful mal-practice followed in their train. A philosophical mode of reasoning was now introduced and the inductive system of investigation brought to bear upon the scattered truths which ages had accumulated. The task of arranging these facts and deducing principles, fell to the lot of Broussais,—and France who had ever drawn her light from her neighbor's lamp, now boasts of a new, brilliant and philosophic theory. Of that theory I shall speak hereafter. It is the connecting link between the present and the past,—contains much to admire and much to condemn—and although energetically denounced, it will remain a monument to his genius, and like the Pyramid in the desert, attract the wondering and admiring gaze of generations reposing in the womb of time. We have claimed for the present, the enviable privilege of enrolling medicine among the precise sciences, and he only who has been a constant student can appreciate the ground upon which we rest this claim. We frankly admit that we have discarded all theories, and place the reputation of our profession upon the brilliant discoveries resulting from the unceasing investigations of the last twenty years. In that period, so vast have been the discoveries and so important the results, that he who ceased his labors at its dawning, will find, like Rip Van Winkle, that while he enjoyed his dreamy slumber in Sleepy Hollow, the sceptre had passed into other hands, and a new and more active population are denizens of the soil.

The characteristic of the present system of inquiry is a patient investigation after truth. The discovery of an irrefutable fact is hailed as a brilliant snatched from the sand,—it is intrinsically

valuable, though it may be a long period before it decorates a tiara. In anatomical investigations the name of the organ, its form and location, is now merely regarded as the outline of the work;—each fibre and every particle that aids in constructing that fibre must pass under the microscopic view of the investigator. He must examine its form, accurately decypher its relation to its fellow, analyze the constituents of which that particle is composed, and then he conducts it to the hands of the physiologist, for his scrutinizing observation. Such examinations must eventuate in a thorough and complete analysis of every part of the animal frame, and as far as anatomy is concerned, it may be said to be almost entitled to rank among the precise sciences.

Physiology stands not far in the rear of anatomy. It does not now content itself with viewing the heart as it makes its propulsive effort to supply the vessels that surround it,—but it removes the heart,—examines the arrangement of every fibre,—calculates its power, direction and influence: passes along the blood vessels; contemplates not only their structure and arrangement, but insists upon witnessing their action when healthily employed. Arriving at the extreme termination, it catches a particle of blood and measures what it has lost or gained,—for what object it was destined, and how far it influenced, or was influenced, by the vessel that circulated it, or the structure to which it was conveyed. By this process, it investigates all the structures of the animal body, and having collected a series of facts, so arranges and classifies them as to deduce a general law. Nor has one set of organs alone arrested the attention of the physiologist. The composite portions of every organ, and the various elementary textures have all passed in review before his microscopic eye, and a series of general laws, as immutable as those of the Medes and Persians which altered not, have been the fruitful result. Not content to contemplate the work as a perfect whole, he has followed nature into the very doorway of her workshop,—demanded from her the mode by which she produced these magnificent events. Nay, he has caught her working upon the first elementary atom, from which she fashions man,—and having obtained from her the outline of her plan, he walks with her, hand in hand, or dogs her path, to catch new mysteries as she carelessly displays them. Of the general physiological laws, it does not become me to speak here, but in presenting them to you hereafter, as the basis of all pathological reasoning, I shall be compelled to carry you back to the investigations from which they are deductions, and you will then discover that much that now appears to you mysterious and wonderful, is accomplished by the action of a very simple natural law,—a law always in operation and developing similar results in both the vegetable and animal kingdoms. Vitality will then no longer be inexplicable, for by contemplating it in its most elementary and simple operations, you will only wonder why it should so long elude the grasp of the inquirer, or how such grand displays can spring merely from the aggregation of simple and feeble elementary operations. Here then will there be an ample field for the exercise of all your faculties, and as you stray along that, which had seemed to be a rugged and forbidding path, you will gather, here a gem, and there a brilliant, fragrant flower; and as your flagging spirit seeks repose, you will be soothed by the reflection that you have been companioning with the wisdom and labor of the past, and while interrogating nature, looking through her up to nature's God.

Thus far advanced, the student has gained but an ingress to the vestibule of his profession. He has examined the intricate mechanism of man, calculated the relative bearing of the several parts of his organism,—followed them through the whole range of their operations,—has become familiar with the action of vital laws and is prepared to explain how healthful man is hourly sustained. As yet he has not beheld disease. He can well imagine that with such an elaborate and exquisitely constructed frame, he can resist the pernicious influence of surrounding objects, or perpetuate his existence. Of disease he dreams not. He can understand how, when four score and ten has been completed, the mechanism so incessantly employed, may feel the blighting influence of wear and tear. Nay, he can argue with himself and bring conviction to his mind, that the ruddy cheek of infancy, must of necessity (under the influence of the laws of growth) give place to the fulness and grandeur of mature life. He may even comprehend how that maturity may sink into feeble, tottering old age, and may calmly watch the flickering of the expiring flame of life: but how amidst these sturdy vital acts, disease can paralyze, is yet to him a mystery, unrevealed. He has forgotten to perceive that in the perfection of the animal organism is concealed the element of its destruction.

XUM

The varied objects that surround him,—the air that vivifies and sustains him,—the gentle rain that supplies him with nutriment,—the objects that delight his eye,—the music that lulled him to repose,—nay, all the sources of his enjoyment,—may, under peculiar circumstances, be pernicious in their influence, and become fruitful causes of suffering, disease or death. The study of these causes and the mode by which they modify the physiological laws, so as to develope a new train of phenomena, at variance with them, constitutes in part the study of medicine. When the body is guided and controlled by those normal laws which are the consequences of its organization, and which are necessary to its support, it is said to be in health; when it displays new phenomena, irreconcilable with its organization, its functions are perverted, and it is pronounced, diseased. To measure the extent of this aberration from the normal state, and to estimate its results, is the province of Pathology. To devise appropriate means, and to select the agent which will restore the natural functions, is to develope the resources of Therapeutics.

While I have given you a bird's-eye glance at the Science of Medicine, I have studiously avoided reference to the department which has been assigned to me; not that its claims are humble or its designs uninteresting,—but rather to elude the operation of that natural impulse of the human heart, which prompts it to dwell, incessantly, upon the objects which it fondly loves. To parade before you the history of Surgery, would be to display a bloody sheet, and probably instead of entangling you in its toils, disgust and ultimately repulse you. Yet many of its achievements have been so brilliant, and its career so ennobling, that I should be wanting in respect to the past, to entirely neglect its claims.

I will not, Gentlemen, contend that Surgery was rocked in the cradle with Medicine, or drew its early nutriment from the same fountain; nor will I argue that Tubal Cain was an artificer and a manufacturer of surgical instruments. To Medicine I cheerfully award priority of existence, and while I concede to her all that can be claimed for the symmetry of her person, the refinement of her manners, and her gentle and lowly bearing as she passed along, scattering her beneficent gifts on every hand; ministering in the cot as well as in the palace; smoothing the brow so lately wrung with anguish; wiping away the tear-drop and planting a smile where sorrow had selected her abode;—admitting all this, still I cannot overlook her younger brother, chivalric and daring in spirit, whose heart is softened by the same benevolent designs, whose gifts are as rich, though dispensed by a crimsoned hand. When Medicine was bathing in the pellucid streamlets of Egypt and vainly admiring the symmetry of her proportions as they were reflected from their mirror-surface, or joined in the gorgeous rites of the Temple;—Where think you was her brother? Revelling in the splendors of the Court or sharing Regal favor?—Far different was his lot. His path was rugged and thorny, —his home the roadside,—his employment dispensing charity, and pouring the healing balsam upon the wounds of the strolling mendicant. Such were their different fates in early youth, but in adolescence the natural and undying impulse (which emanates from the accidental circumstance of drinking from the same fountain and reposing upon the same maternal bosom) prompts them to seek each other; and having again embraced, we find them united by the bonds of an indissoluble friendship;—and blighted be the hand that would attempt to sever them.

The pages of Surgical history are covered with such variety of thrilling incidents, and record so many tales of horror, that the heart of the student fails him ere he has turned them half over. At one time he finds Surgery gloting over the wounded and the dying, as they are borne from the battlefield: and at another beholds it breathing the pestilential atmosphere of the charnel-house, where the half-putrescent body is hurrying to decomposition. It is true the surgeon cannot delight him with such brilliant theories as marked the onward progress of Medicine, but he can fire his ambition, as he points him to the dazzling trophies of his art.

Think not young gentlemen, that I intend to require for the successful cultivation of Surgery, a higher order of intellect than is demanded for Medicine—far from it. I ask for both a mind of natural energy and activity, and a severe and rigid tutorage. The achievements of Medicine, although apparently less brilliant than those of Surgery, are equally as important; involve the same castigation of mind, the same rigid observation, the same anxious attendance,—but they are not as palpable to the senses, and consequently not as productive of reputation. For this reason, if none other could be adduced, Surgery commends itself to the attention of every student. A skilfully executed surgical operation will

seldom fail to bring an additional modicum to the reputation of the surgeon,—while a long catalogue of diseases, judiciously and successfully treated, may fail to attract even a passing notice; for although the mutilated body is an opprobrium to the healing art, still it is a sign-post for the skilful operator. Such being the advantages which flow from the cultivation of Surgery, we cannot fail to commend it to the favorable consideration of all who are struggling for professional fame. But I hear one of you whisper, is there no higher incentive for the cultivation of Surgery than the sordid, selfish motive I have adduced. Aye! there is a far nobler and more elevated impulse—the desire to alleviate the sufferings of your fellow, or to snatch him from an impending death. Nor does Surgery confine itself to these restricted bounds. It professes to correct the errors of nature, when she strays from her usual and legitimate course, so that there is scarcely a mal-formation that is not under its immediate control. I need not enumerate the elements which compose the long list of mal-formations which are hourly exhibited, where individuals are densely congregated, —for the mind immediately calls up hare-lip, stammering, squinting, congenital blindness, club foot, and a long catalogue of deformities, which mar the beauty of the human frame, or interrupt the even current of human enjoyments. Well might the Roman orators assert, that man approximates the gods when he alleviates the sufferings of his fellow, or corrects the deformities which mar his happiness;—for one of the brightest pages in the life of the Holy Nazarene is, when on His errand of mercy, He made the blind to see;—the lame to walk.

From this hasty sketch you must have perceived, that of all others, your profession presents the greatest number of allurements to the youthful mind;—for it is a natural attribute of the youthful heart, to commiserate the infirmities of others, and to desire to relieve them. This therefore is the suitable hour to plant the seed of a profession, which blooms luxuriantly only, in a rich fertile soil. Now the mind is elastic, and readily adapts itself to the severest study. Ambition is kindling its first fire,—and Hope is in advance of you, gilding the future. When can there be an hour more appropriate for the dedication of your talents and energies to the business of life? Hereafter, the excitement and turmoil of the world will distract you, and the chilling influence of society will extinguish the flame which youthful ambitions kindled. Let no pleasure seduce you, no allurement beguile you from your path.

It is not unfrequently the custom, upon the opening of a season of Medical instruction, to alarm and intimidate the student by a solemn parade of the difficulties he must immediately encounter; and many an ingenious youth, has suddenly turned aside from the path which his best reflection had selected. If what I have already said, has tended in any measure to produce such an impression upon your minds, I have over-leaped my intention. I have desired merely to elevate your profession in your estimation, and to place it before you as it now stands in the view of the learned of every country. That some difficulties will be encountered is what you all have reason to expect, but that they are insurmountable by the industrious student, is more than I am willing to admit. Industry always reaps as its reward, knowledge. Indolence gathers ignorance as its harvest. There is a casket of rich gems placed before you; each one is brilliant and beautiful; the diamond is the most dazzling, the ruby is the richest, but the emerald is the greenest, while the sapphire is the deepest blue. Which shall you select with which to ornament a diadem? Will you take the diamond and neglect the ruby, the emerald and the sapphire? Or would you not rather place them all side by side, and instead of robbing each other, they will blend their beauty in one harmonious whole? Thus it is with the departments of Medicine. Anatomy calls upon you for admiration, Medicine stands hard by, Surgery boldly asserts its claims, and Chemistry and Therapeutics are ready to dispute them. Attach yourselves to no one in particular,—salute all cordially, and make them all companions.

Having said thus much, I might now consider that I had given you a formal introduction to your profession, and leave you to direct your own steps—but cast your eye around you, and you will discover that there are some who have been attracted, not like you to hear the first lecture of a course in which they are hereafter to participate, nor have they come expecting an eloquent discourse from the lecturer; but they are here, as an earnest of the deep interest which the community feels in the disposal which you are about to make of your time—They come to cheer you onward—and to offer an approving salutation for the attachment you have displayed to your native soil. They are here to join hands with you, as you battle with that degrading prejudice, which

has well-nigh made the South vassal to the North, and proclaimed to the world, that the sun of Virginia's greatness has suffered a total and eternal eclipse. To ward off these melancholy results, it is necessary that her youth should be educated on her own soil, and under the benign influence of her own institutions. If this servitude must come, let it be when your children's children are sleeping in their graves, and Virginia is prepared to admit that her lofty mountains and fertile valleys, her delightful climate and her domestic institutions, deteriorate the human mind.

The institution, which for several years has presented her claims before the medical community of the South. and which you this day honor with your presence. professes no higher origin than the heartfelt desire of a few humble Southern physicians to recal those truant sons of the South who had wandered from their homes. Unrewarded labor—denunciation, and legislative neglect, instead of repressing their ardor, prompted them to renewed exertions; and at length, through your generous countenance they recognize the dawning of the full realization of their most sanguine hopes. The establishment of such an institution was demanded by Virginia. Her youth, which constituted by far the larger portion of medical students, annually thrust from the influence of her domestic institutions, were not unfrequently alienated or attainted in sentiment upon those questions, which are of vital importance to the prosperity of the South, and their own personal advancement. Fettered, as she has been in trade, and tributary to the North, to the amount annually of millions, while it humbled her pride, left her still in the possession of her chosen and beloved associations; but when the South educates her sons among a people who have no common feeling and interest with her domestic institutions, she is forging the great lever which must ultimately prostrate and despoil her. If we are ever to burst the shackles of an insulting bondage, when is the first struggle to be made? Is it, when the demon of fanaticism, maddened by our supineness and submission, has tracked her polluting footsteps over her violated rights?—or, is it not rather now, when we can erect a barrier and bid her, thus far thou mayst come, but no farther,—and fearlessly tell her, that she can no longer dazzle and allure us by the ignis fatuus, which floats over an engulphing morass?

When a few more fleeting hours shall have passed away, you will have entered upon the vast sea of medical inquiry.—Facts, opinions, theories, will be passed in review before you.—You will be enchanted with the beauty and ingenuity of some, confused and bewildered by the subtlety of others, and you may even be surprised at the freedom with which we handle great names. Theories must be discussed, errors must be exposed, and truth made triumphant —but, gentlemen, do not mistake the motive, or the language in which that motive is couched. It is a friendly warfare, and is only characterized by that peculiar roughness which has ever distinguished our profession. Fear not, if at any time you should hear a favorite position of your own rudely assailed—for, probably at the next hour, you may find it as ably defended—for, I assure you, while the assailants of the ill-starred Broussais have tarnished his fame, and labored actively to consign him to an odious immortality, there have been hearts as warm, and tongues as eloquent, to chaunt his praise and eulogise his talents—and even now, devoted hands are weaving a chaplet to surround his undying fame. This contrariety of opinion will enable you to view all that has been presented in Medicine, and afford you the opportunity of selecting that which is worthy of preservation. In all your inquiries, forget not that man is the object of your pursuits. Created in the image of his God, and impressed with capabilities for the highest attainments in goodness and knowledge, he is still touched with mortality, and threatened with blight and decay. Prattling infancy, restive adolescence, vigorous manhood, and tottering age, alike, must feel the paralyzing hand of Death—for beautiful as is that frame in its maturity—disease—decay may soon assail it, and the mind exuberant in with—the spirits, elastic and buoyant in health—and the cheek, roseate with blooming youth, but provide for the despoiler a richer and more sumptuous banquet. Despond not, then as you cast your eye over the long drawn catalogue of human diseases, if you should find each page marked by the footsteps of Death—for, it was promised him he should ultimately triumph, in defiance of all the powers of man.

There is a faculty of the human mind, which, whether we desire it or not, carries us back by retrospective steps to the scenes through which we have already passed. Memory is the agent that accompanies us, and he is every busy in seeking out some shaded spot on which to rest, or some moving scene

to soften our hearts, or improve our conduct. It is memory, which enables imagination to pass before the eye the scenes of childhood, though long ago departed—It is memory, that points out the mossy bank on which, in early youth, we sported—It is memory, that charms the ear with that merry shout which had long since been forgotten—It is memory, that paints before old age, in glowing colors, the home so sadly changed by time—It is memory, that recals those accents, ever sweetest to the ear, a mother's greeting—So is it memory, that calls up, in grim array, time mispent, opportunities neglected, and ever sounds in the ear those upbraidings, which pricked conscience can never quiet. Then, gentlemen, let your time be well spent—Let every opportunity be improved, so that you may join with memory in his gayest revel, or follow him in his most erratic excursion.

SPIROCHETAL JAUNDICE IN VIRGINIA*

With Special Reference to Laboratory Diagnostic Methods

J. DOUGLAS REID, Sc.D.,
and
REBECCA A. HOLT, M.A.,
Richmond, Virginia.

Weil's disease or spirochetal jaundice is an infection with *Leptospira icterohemorrhagiae* or *Leptospira canicola*. This disease has been reported with increased frequency from the European countries for twenty years, but only recently have other than occasional cases been recognized in the United States. The greater opportunity to contract the infection through water accidents and poor sanitary conditions in certain areas is undoubtedly responsible for the higher incidence of the disease abroad. For example, the majority of the cases occurring in The Netherlands, where the disease is reportable, are contracted as the result of swallowing or aspirating water while swimming or through falling into polluted canal water. In addition to this mode of infection, certain occupational groups, coal miners, junk dealers, meat, poultry and fish market workers, sewer cleaners, slaughter house workers and the like are more apt to contract the disease than others because of the greater chance for direct contact with rat excretions. Veterinarians also are liable to infection with the dog strain of leptospirae through the handling of infected animals.

It is in the above mentioned groups that we find most of the cases occurring in this country. There is little reason to doubt that numerous cases of the milder forms of the disease go unrecognized or are clinically confused with epidemic jaundice. It is with these cases that the laboratory can aid materially in establishing the correct diagnosis.

Spirochetal jaundice is characterized by an acute onset with chills, fever, and severe muscular pains, particularly in the calves of the legs. An interstitial nephritis and jaundice may supervene. The incubation period is five to seven days. Two stages are evidenced. During the first stage, a septicemia occurs, the organisms being found in the blood and internal organs. During the second stage, a toxemia and jaundice appears. The spirochetes disappear from the blood, but may be excreted in the urine. Agglutinins and lysins begin to appear in the serum. Leukocytosis with an increase in polymorphonuclear cells is present. The disease may vary in intensity from an ambulatory type to a severe form terminating fatally. Jaundice may or may not appear. It is seldom seen in infections with *Leptospira canicola*.

In contrast, epidemic jaundice which is thought by Findlay[1] to be caused by a virus is characterized by loss of appetite, nausea, vomiting, fever, loss of weight, headache and drowsiness. There is usually a leukopenia. Symptoms that are associated with Weil's disease occur in less than 20 per cent of these cases, but are frequent enough to require consideration in differential diagnosis (Molner and Meyer).[2]

The recognition of spirochetal jaundice was probably first made by Larrey in 1800 in Napoleon's troops. However, it was Weil in Germany who first described the disease as a clinical entity. The causal agent of Weil's disease was first isolated from the blood and tissues of cases by Inado, Ido, Hoki, Kaneko and Ito[3] in 1915. In 1918, Noguchi[4] first gave it the name *Leptospira icterohemorrhagiae*.

*From the Department of Bacteriology and Parasitology, Medical College of Virginia.

Ido, Hoki, Ito and Wani[5] in 1917 discovered the organisms in *Mus norvegicus* and *Mus alexandrinus*. They found that a high percentage of these rats examined were carriers and that the spirochaetes were usually found only in the kidney, especially in the convoluted tubules of the renal cortex. Okell, Dalling and Pugh[6] proved the spirochetal nature of infectious jaundice in dogs by isolating the organism and by reproducing the disease in guinea pigs and dogs. In 1933, Klarenbeek and Schüffner[7] first recognized *Leptospira canicola*, the spirochete producing this disease, as a separate species on immunological grounds. These spirochetes may be carried from dogs to man and set up the infection known as Weil's disease. Latent infection has been demonstrated serologically by Meyer, Stewart-Anderson and Eddie[8] in about one-third of the normal dogs examined and in 60 per cent of dogs over six years of age. Dogs may be infected with either *Leptospira canicola* or *Leptospira icterohemorrhagiae*.

A survey of the following cities by various workers gives an indication as to the number of rats showing infection with *Leptospira icterohemorrhagiae* in the United States: San Francisco, 35 per cent; Nashville, 10 per cent; New York, 17-21 per cent; Albany, 40 per cent; Baltimore, 7 per cent; Detroit, 16 per cent; and Rochester, 38 per cent.

Cases of Weil's disease with clinical diagnosis supported by successful transmission of leptospiral infection to guinea pigs with blood, urine, spinal fluid or kidney tissue, or by satisfactory microscopic demonstration of leptospirae in tissues obtained at autopsy, or by serological tests have been reported in various parts of the United States; namely, Connecticut, New York, New Jersey, Pennsylvania, District of Columbia, Virginia, California, Michigan, Colorado, and possibly Texas and Rhode Island. In Virginia, one and the same case has been reported by Blanton[9] and Mulholland and Bray,[10] another one by Mulholland and Bray[11] and seven by Bloom and Walker.[12]

The increasing number of cases of Weil's disease being diagnosed in the United States indicates that this disease is more prevalent here than had been previously suspected. Since the clinician has turned more to the laboratory during the last few years for aid in the differential diagnosis of jaundice, the greater availability of materials and familiarity with the technic of spirochetal culture and study will result in additional case findings. The spirochetes as a group are more difficult to isolate and cultivate than the majority of pathogenic organisms. Specialized procedures are essential for accurate diagnosis and for this reason, we are presenting the methods which have proven to us satisfactory in the laboratory diagnosis of Weil's disease. Brief histories of four cases also are given. Three of these cases were admitted to the hospitals of the Medical College of Virginia and one to the Retreat for the Sick, Richmond.** These same procedures were used to aid in the diagnosis of several of the cases recently reported by Bloom and Walker.

CASE HISTORIES

Case 1. J. B., an eighteen-year-old, colored, male, poultry picker was admitted to St. Philip Hospital, November 23, 1939, with a history of having been taken ill five days previously with a chill followed by fever, headache and general muscular pains which were most severe in the left flank and left lower quadrant. Jaundice was noted two days after admission. Agglutination tests† were positive in titres of 1-1000 against *Leptospira icterohemorrhagiae* on sera taken seventeen and twenty-two days from onset, whereas similar tests against *Leptospira canicola* were negative. Darkfield examinations and guinea pig inoculations with urine were negative with specimens collected on the ninth and thirteenth days of illness. The patient made a good recovery and was discharged from the hospital January 5, 1940.

Case 2. B. N., a fifty-six year old, white, male, pump operator was admitted to Memorial Hospital, January 25, 1940, with a history of having been taken ill ten days previously with a chill followed by fever and severe muscular pains in the lower part of the back. He had noted the appearance of jaundice two days before admission. A darkfield examination of the urine eleven days after onset of symptoms revealed the presence of spirochetes, although a guinea pig inoculated two days later with a fresh specimen of urine showed negative findings. A titre of 1-10,000 was obtained in agglutination tests against *Leptospira icterohemorrhagiae* forty-three days after onset of illness. Agglutination tests against *Leptospira canicola* were negative. The pa-

**The clinical history and laboratory specimens for examination on this case were obtained through the courtesy of Dr. W. G. Page.

†The authors wish to acknowledge the assistance given by Dr. C. L. Larson of the National Institute of Health, Washington, D. C., in checking the results obtained with the agglutination tests in our laboratory.

tient was discharged from the hospital March 5, 1940.

Case 3. G. M., a twenty-five-year-old, colored, male, poultry picker was admitted to St. Philip Hospital on December 6, 1940, with a history of having been taken ill five days previously with a severe chill followed by headache and general muscular pains. Jaundice was noted on admission. After an illness of nine days, an agglutination test with the patient's serum proved positive in a titre of 1-10,000 against *Leptospira icterohemorrhagiae* and negative against *Leptospira canicola*. A guinea pig inoculated with the patient's urine, collected on the twenty-third day after onset, gave positive gross autopsy findings. These were confirmed microscopically by the finding of spirochetes in kidney sections. Earlier guinea pig inoculations with urine and blood gave negative results. The patient was released from the hospital December 31, 1940.

Case 4. R. Mc. a forty-three-year-old, white, male, bricklayer was admitted to the Retreat for the Sick Hospital, February 7, 1941, with a history of having been taken ill January 21, 1941, with a severe chill followed by fever. He had remained in bed since that time. Jaundice was first noted one week after the onset of illness, his chief complaint having been a constant pain in the lower part of the abdomen. An agglutination test made fifteen days after the onset of the illness proved positive in a dilution of 1-10,000 against *Leptospira icterohemorrhagiae* while that against *Leptospira canicola* was negative. The darkfield examinations and guinea pig inoculations of urine were negative. The patient was discharged from the hospital March 8, 1941.

The causative agent of these cases was *Leptospira icterohemorrhagiae* as indicated by the clinical history and the high titre of antibodies demonstrated in the sera against this organism. All agglutination tests against *Leptospira canicola* were negative. Also, on the basis of high agglutinin titres obtained, we believe that at least three of these cases would have been diagnosed by serological tests at an earlier date had there been opportunity to obtain sera before their admission to the hospital. The occupations of these individuals were such as to suggest that all infections were the result of exposures of man to rat leptospirae by water accidents or contact with sewage, mud, soil, or garbage in the vicinity of rat harborages. Experimentally, it has been shown that guinea pigs may be infected through the unbroken skin, mouth, nasal mucous membrane and abraded skin. A rat bite seldom produces an infection.

One patient in our group was a bricklayer and one a pump operator. Two others picked chickens in a market where rats are known to be numerous. The home environments of these patients were of a nature that rat borne infections were possible, but not probable.

LABORATORY DIAGNOSTIC PROCEDURES

In order to determine the type of specimen to collect for bacteriological examination, familiarity with the location of the organism in the body at different stages of the disease is essential. Future success in establishing the proper diagnosis of spirochetal jaundice will depend upon the close cooperation of the physician with the bacteriologist. In the bacteriological laboratories of the Medical College of Virginia, a suspected case of Weil's disease may be proven by one or more of the following methods:

I. PATIENT'S BLOOD.

a. After the first week of illness while a septicemia is present, or before jaundice and toxemia appear, a young (approximately 175 gm), preferably white guinea pig is injected intraperitoneally with 3 to 5 cc of patient's defibrinated blood. In infection, the chief symptoms in the guinea pig are fever and jaundice, the disease usually terminating fatally in five to twelve days. At autopsy, leptospirae may be found by darkfield examination of macerated liver and kidney tissue of the guinea pig or in sections of these tissues prepared with proper stains for spirochetal studies. They may be recovered, sometimes readily, but at other times with difficulty, by the inoculation of macerated kidney or heart's blood into Verwoort-Schüffner media and cultivated at room temperature.

b. A darkfield examination of a fresh specimen of the patient's defibrinated blood collected during the first stage of the disease is made, care being taken not to mistake the cellular fibrils for leptospirae. The morphology and movement of these spirochetes are very characteristic. The spirals appear at abrupt 45° angles and very active motility usually is noted.

c. After the second week of the disease or during the jaundice and the toxemia, the leptospira agglutination-lysis test using the porcelain plate method of Meyer, Stewart-Anderson and Eddie[13] is of great value. Their test slightly altered is as follows:

ANTIGENS—Living four to six days old cultures of *Leptospira icterohemorrhagiae* and *Leptospira canicola* grown in Verwoort-Schüffner medium are used.

TEST: Using sterile tubes, the serum of the patient is diluted with Verwoort-Schuffner buffer solution in the following manner:

Tube	1	2	3	4
Buffer	1.2 cc.	0.9 cc.	0.9 cc.	0.9 cc.
Serum*	0.3 cc.			
Dilution	1:5	1:50	1:500	1:5000

*Transfer 0.1 cc. of the serum buffer mixture from 1 to 2, from 2 to 3, and from 3 to 4.

Two sterile porcelain plates are used for each specimen to be examined. Set up tests as in model given below, taking care to avoid contamination. Incubate for two hours at 37°C and examine each dilution by darkfield for agglutination or lysis. Agglutination often occurs in the lower dilutions.

Should killed antigens be used, set up additional tests in a similar manner. Incubate plates containing killed antigens for four hours at 37°C. Examine each dilution by darkfield for agglutination.

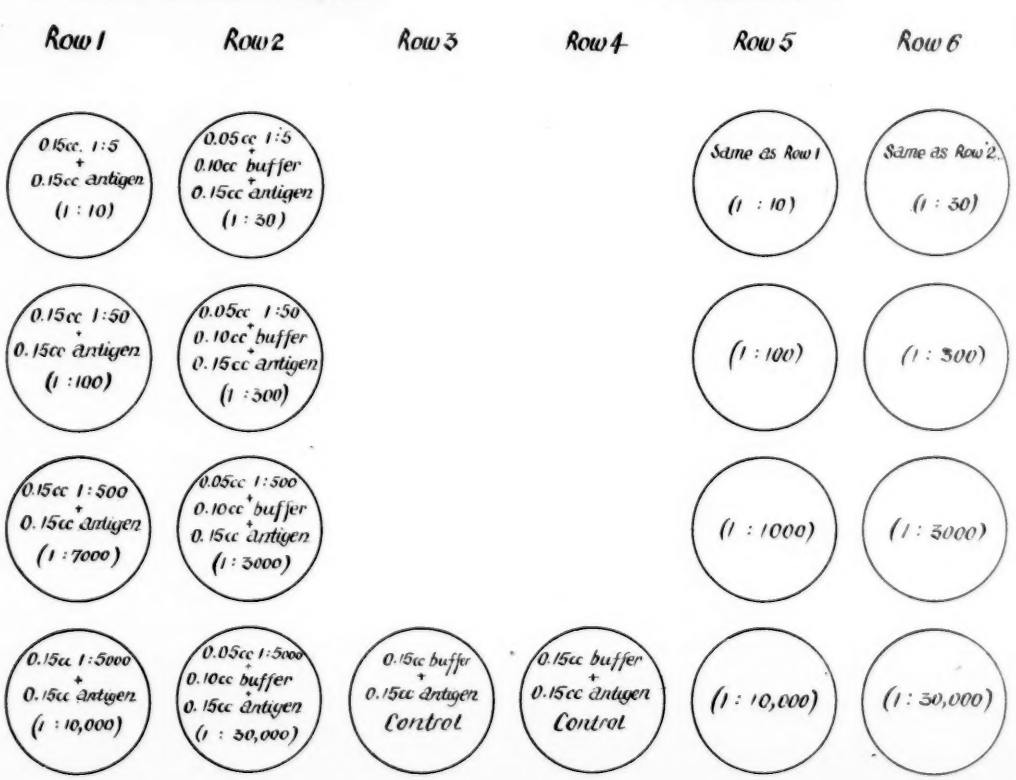
II. PATIENT'S URINE.

a. The sediment from 30 to 40 cc of fresh specimen of urine is collected during the second week of illness and injected intraperitoneally into a young, white guinea pig. Should the test prove positive, the clinical picture of Weil's disease as above described in this animal is seen. Leptospirae may be seen by darkfield studies of kidney suspension and heart's blood and in section when impregnated with silver. They may be recovered in culture, using Verwoort-Schüffner medium.

b. A darkfield examination of a fresh specimen of urine collected during the first stage may show the presence of leptospirae.

DISCUSSION

Emphasis should be placed on the fact that no single laboratory examination has proven entirely satisfactory for the diagnosis of Weil's disease be-


L. icterohemorrhagiae
L. canicola
Row 1
Row 2
Row 3
Row 4
Row 5
Row 6
0.15cc. 1:5 + 0.15cc antigen (1:10)
0.05cc 1:5 + 0.10cc buffer + 0.15cc antigen (1:30)
Same as Row 1 (1:10)
Same as Row 2 (1:30)
0.15cc 1:50 + 0.15cc antigen (1:100)
0.05cc 1:50 + 0.10cc buffer + 0.15cc antigen (1:300)
(1:100)
(1:300)
0.15cc 1:500 + 0.15cc antigen (1:7000)
0.05cc 1:500 + 0.10cc buffer + 0.15cc antigen (1:3000)
(1:1000)
(1:3000)
0.15cc 1:5000 + 0.15cc antigen (1:10,000)
0.05cc 1:5000 + 0.10cc buffer + 0.15cc antigen (1:30,000)
0.15cc buffer + 0.15cc antigen Control
0.15cc buffer + 0.15cc antigen Control
(1:10,000)
(1:30,000)

cause of fallacies in each test. In guinea pig inoculations typical symptoms may not appear in older animals and unless care is taken to make daily temperature readings and examine the blood for spirochetes during the period of fever, false negative results may be obtained with specimens containing leptospirae. A young, healthy, white guinea pig weighing approximately 175 gm. has been found by us to be fairly satisfactory for general use. Packchanian[14] suggests the use of certain species of deer mice as suitable susceptible small laboratory animals for experimental studies of icterohemorrhagic spirochetosis and for the diagnosis of Weil's disease.

The detection of leptospirae by direct darkfield examination has been sometimes difficult chiefly because in blood, the fibrils of red blood cells have been mistaken at times for spirochetes, and in urine, the spirochetes tend to become non-motile and disintegrate readily.

With the agglutination test, difficulty has been encountered at times in obtaining suitable antigens of *Leptospira icterohemorrhagiae* and *Leptospira canicola*. We make use of an untreated four to six day old culture. Meyer *et al*[13] use formalin killed cultures, adding three drops of commercial formalin per 10 cc of culture. Brown[15] adds to a broth culture of leptospirae sufficient saponin and formalin to make a final concentration of 1-1,000 of the former and 1-200 of the latter solution. This suspension is then centrifuged, resuspended in saline and bottled for routine use. For diagnostic purposes, it is best to run an agglutination test during the first or second week of illness and again a week or so later.

SUMMARY

Four additional cases of spirochetal jaundice have been found in Virginia. These bring the total number of cases reported from Richmond to eleven and in Virginia to thirteen. All of these cases were diagnosed clinically and ten were confirmed by laboratory findings.

The diagnostic procedures used in our clinical bacteriological laboratories have been given and emphasis placed upon the leptospiral agglutination-lysis test as a valuable aid in the diagnosis of Weil's disease.

REFERENCES

1. Findlay, G. M., MacCallum, F. O., and Murgatroyd, F.: Observations Bearing on Aetiology of Infective Hepatitis (So-Called Epidemic Catarrhal Jaundice). Tr. Roy. Soc. Trop. Med. and Hyg., 32:575-586, 1939.
2. Molner, J. G., and Meyer, K. F.: Jaundice in Detroit. *Am. Jour. Pub. Health,* 30:509-515, 1940.
3. Inado, R., Ido, Y., Hoki, R., Kaneko, R., and Ito, H.: The Etiology, Mode of Infection and Specific Therapy of Weil's Disease (Spirochaetosis icterohaemorrhagica). *J. Exp. Med.,* 23:377-402, 1916.
4. Noguchi, H.: Morphological Characteristics and Nomenclature of Leptospira icterohaemorrhagiae (Inado and Ido). *J. Exp. Med.,* 27:575-592, 1918.
5. Ido, Y., Hoki, R., Ito, H., and Wani, H.: The Rat as a Carrier of Spirochaeta icterohaemorrhagiae, the Causative Agent of Weil's Disease (Spirochetosis icterohaemorrhagica). *J. Exp. Med.,* 26: 341-353, 1917.
6. Okell, C. C., Dalling, T., and Pugh, L. P.: Leptospiral Jaundice in Dogs. *Vet. Jour.,* 81:3, January, 1925: Ref. *Bull. Health Organ,* 8:143, 1939.
7. Klarenbeek, A., and Schüffner, W.: Het voorkomen van een afwijkend leptospiremas en Nederland. *Nederl. tijdschr. v. geneesk.,* 717:4271-4276, 1933; Ref. *Bull. Health Organ,* 8:143, 1939.
8. Meyer, K. F., Stewart-Anderson, B., and Eddie, B.: Epidemiology of Leptospirosis. *Am. Jour. Pub. Health,* 29:347-353, 1939.
9. Blanton, Wyndham B.: Infectious Jaundice. *Va. Med. Month.,* 54:210-214, 1927.
10. Mulholland, H. B., and Bray, W. E.: Spirochaetal Jaundice: A Case in Virginia. *J. A. M. A.,* 90: 1113-1114, 1928.
11. Mulholland, H B., and Bray, W. E.: Weil's Disease—Report of a Case with Autopsy Findings. *Internat. Clin.,* 4:122-126, 1937.
12. Bloom, Nathan, and Walker, Harry: Spirochaetal Jaundice (Weil's Disease). *Va. Med. Month.,* 68: 192-200, 1941.
13. Meyer, K. F., Stewart-Anderson, B., and Eddie, B.: Canine Leptospirosis in the United States. *J. Am. Vt. M. A.,* 95:710-729, 1939.
14. Packchanian, A.: Susceptibility and Resistance of Certain Species of American Deer Mice, Genus Peromyscus, and other Rodents to Leptospira icterochaemorrhagiae. *Pub. Health Rep.,* 55:1389-1402, 1940.
15. Brown, H. C.: A Rapid Presumptive Serological Test for Weil's Disease. *Brit. M. J.,* 2:1183-1184, 1939.

GERIATRICS AND ITS ROLE IN OTOLOGY*

JAMES A. BABBITT, M. D.,
Philadelphia, Pennsylvania.

The preparation of this paper was inspired *first* by the increasing number of patients of advancing age who recognized incipient deterioration and sought relief from its otological factors. This, beside the otological, required a study of the circulatory, eliminative and nutritional background for some indications pointing toward rehabilitation or at least staying further degeneration.

A second factor was the surprising foothold which the basic study of geriatrics and its brilliant avenues of promise had obtained throughout the world, and the absorbing interest which had been taken by both younger and older generations in organized service as well as individual research.

In the ophthalmologic field, rapid progress has already been made in every department.

In otolaryngology, the accessory sinuses, with the present conservative trend, the rhinopharyngeal tract, through the brilliant work of Crowe and his associates, and indefatigable studies of the pharyngeal lymphoid tissue elsewhere, laryngeal diagnosis and surgery—have reached a rather conclusive stage. Malignancy has been controlled but not yet conquered to the same degree as tuberculosis and specific disease.

In otology, middle ear infection has been subdued, partly due to biochemic advance, but progressive deafness, a major geriatric problem, is far from being solved, and that in spite of concentrated research effort.

An effort will be made to present the problem clearly as the major one in this field for patients of maturing age, and not confuse the issue too deeply in the bewildering terms of osseous dystrophy, halisteresis and osteoporosis.

Historically, geriatrics does not present a new field, as all of you who have labored through Cicero's famous oration will agree, although it has been usually developed under some such composite title as problems of the aging. Most articles of recent importance have appeared within the past five or six years. The coining of the word was claimed by Nascher in 1909[1], whose formal publication, "Geriatrics; Diseases of Old Age and Their Treatment," appeared in 1914[2]. It is at least refreshing to have such a dignified title instead of "senility" so often carelessly applied. It is a matter of regret that this contribution could not have been a bit of definite research to have been offered this society. Lack of time and adequate material force this part of the paper to be a collaboration for which references of recent interest will be appended.

The writer's attention was first stimulated by a famous address of Pepper[3] before the College of Physicians, some two years ago, in which he electrified his audience of varying ages by the statement that blood pressure, tobacco, and alcohol moderation were not of so much consequence to the older man as unwise difference in marriage age and dietary indulgence. Rather curiously, conversation after this lecture brought out the fact that many did not even know what "geriatrics" meant.

Bortz[4] has cited these rather interesting facts, somewhat refuting Carlisle's essay in 1819, which placed sixty as the age of beginning senescence. Lord Balfour retired at sixty-five but returned to active duty at seventy-two; Sarah Bernhardt gave one of her greatest performances at seventy; Cato took up the study of Greek at eighty; Goethe completed Faust in his eightieth year; Thomas Edison was active at eighty-five; Titian painted one of his greatest pictures at ninety-eight; the best instruments of Stradivarius were made after ninety. Perhaps to this might be added the active longevity you all have noted in our Supreme Court. It was the writer's pleasure, while delivering an address on "Lateral Sinus Thrombosis" before this Society as Dr. Hunter McGuire's guest at Winchester, many years ago, to form a delightful friendship with one of Richmond's older otolaryngologists, even then a geriatric representative, perhaps little known to the younger generation—Dr. Joseph A. White—whose golf score, though many years the senior, was appallingly better and

*Read before the Virginia Society of Ophthalmology and Oto-Larynogology, May, 1941.

1. Nascher, I. L.: Article in *New York Medical Journal*, August 21, 1909.

2. Nascher, I. L.: Geriatrics—Diseases of Old Age and Their Treatment. Blakiston, Philadelphia, 1914.

3. Pepper, O. H. Perry: Medical Problems of Advancing Age. Lecture before College of Physicians, Philadelphia, November 17, 1939.

4. Bortz, Edward L.: Management and Treatment of the Aged, from Treatment in General Medicine, edited by Hobart A. Reimann, F. A. Davis Co., 1939.

who was still following the hounds and leading the younger cotillions.

Contrast the above enumeration with these quotations from Stieglitz[5], Dublin[6], Piersol[7] and others. The average duration of life of the ancient Roman citizen was from twenty to thirty years. Life expectancy in the seventeenth century had only reached 33.5 years. The mean length of life in Sweden, a distinctly athletic country, between 1755 and 1776 was only 34.5 years. A decade after the Declaration of Independence, the mean life period in America had only increased a year, and by 1850, life expectancy in New England was but forty years.

By 1900, longevity in the United States had increased to forty-eight years and by 1930 to sixty years. Dublin[6] has estimated, by projection, that by 1980, forty years hence, only 26 per cent of the population would be youths under twenty, and 40 per cent of our population would be over forty-five years of age. This statistical information must have been invaluable as an insurance guide. A little reflection will show the future numerical contrast in the specialties of pediatrics and geriatrics.

Much of value has been published in recent years upon this topic, as, for example, that of Cowdry[8] on "The Problems of Ageing; Biological and Medical Aspects" with an introduction by Dewey and twenty-five important contributors; the papers presented by Piersol, Boas[9] and others before the New York Academy of Medicine the past year; the important symposium staged at the University of Pennsylvania Bicentennial, presented by Brooks[10] on Surgical Aspects, Dublin on Statistical and Social Implications, Karsner[11] on Involutional Changes in the Cardio-Vascular System, and Pepper[12] on Medical Aspects. These voluminous surveys, together with the National Research under the Public Health Service, have placed at your disposal a wealth of medical, surgical, pathological and statistical information and should enhance the treatment and protection of this group of people which may soon represent over 22,000,000 people. Discussion of the earlier work of Warthin and others, and the splendid clinical investigations and laboratory research going on today, must be largely omitted.

Dr. Stieglitz[13], in charge of the investigations in Gerontology by the National Institute of Health, differentiates "Gerontology, the problems of old age", from "Geriatrics, the diseases of the aged and consequences of senescence." He divides the problem of aging into three major fields:

1st. The biologic as a process.

2nd. Clinical problems of aging and diseases of advanced age.

3rd. Socio-economic problems of shifting age distribution.

Physiologic age is not synonymous with chronologic age and senescence cannot be measured by chronologic age.

Inasmuch as pathology is the connecting link between the generalized subject of Geriatrics and its specialized application to clinical otology, it is rather appropriate to discuss this basic pathology first.

Piersol[7] considered that the most helpful records of group studies on patients over sixty years of age came from the clinics of Barker and his associates. They reported that chief complaints were referable to the nervous, digestive, circulatory and locomotor apparatus. There were relatively few whose outstanding symptoms suggested diseases of the respiratory tract, the blood itself, the urogenital tract or the endocrines. Cardio-vascular disease, disorders of the nervous system and diseases of bones and joints occurred in that order of frequency.

5. Stieglitz, Edward L.: Publication of National Institute of Health of the U. S. Public Health Service.

6. Dublin, Louis I., Ph.D. (Vice-President and Statistician, Metropolitan Life Insurance Company, New York City): Statistical and Social Implications, part of a symposium on Medical Problems of Old Age, at Bi-Centennial of University of Pennsylvania, Philadelphia, September 17, 1940, published by University Press.

7. Piersol, George M.: The Problem of Aging. *Bulletin of the New York Academy of Medicine,* September, 1940, Vol. 16, No. 9.

8. Cowdry, E. V.: Problems of Ageing; Biological and Medical Aspects. Williams & Wilkins Co., Baltimore, 1939.

9. Boas, Ernst P.: Aging of the Cardiovascular System. *Bulletin of the New York Academy of Medicine,* October, 1940, Vol. 16, No. 10.

10. Brooks, Barney (Professor of Surgery, Vanderbilt University): Surgical Aspects. Part of Symposium on Medical Problems of Old Age, at Bi-Centenntial of University of Pennsylvania, Philadelphia, September 17, 1940. University Press.

11. Karsner, Howard D. (Professor of Pathology and Director Institute of Pathology, Western Reserve University): Involutional Changes in the Cardiovascular System. Part of Symposium on Medical Problems of Old Age, at Bi-Centennial of University of Pennsylvania, Philadelphia, September 17, 1940, University Press.

12. Pepper, O. H. Perry (Professor of Medicine, University of Pennsylvania): Medical Aspects. Part of Symposium on Medical Problems of Old Age, at Bi-Centennial of University of Pennsylvania, Philadelphia, September 17, 1940. University Press.

13. Stieglitz, Edward L.: Gerontology. *Annals of Internal Medicine,* Vol. 14, No. 4, October, 1940.

XUM

Pepper[3] found that senescence was physiologic, whether we liked it or not, and this included certain loss in weight, height, osteoporosis of bone and atrophy of cartilage. While old patients responded to surgery better than medicine, nursing was more important than either. Medication should be guarded, particularly peculiarities in the reception of certain drugs, such as morphine and atropine. Obesity, strain, maladjustments in marriage, should be avoided; food intake should be 10 per cent less; chewing apparatus, feet and skin should be policed. Some authors, however, observed that dietary restrictions in the aged were based on fear and habit, rather than research.

Karsner[11] has offered valuable suggestions as to involuntary changes in the cardio-vascular system; involution or retrogressive changes in aging are distinct from the diseases appropriate to the age. In studying the principles of wear and tear, the destructive effects of friction do not customarily find their counterpart in living organisms. Many of the phenomena called wear and tear are but end results of deteriorating processes initiated by infection.

In 400 autopsies, Aschoff found no deaths attributed solely to old age, and, according to Karsner, such was not recorded in 19,000 autopsies on people of varying age at the Western Reserve University. It is in a certain degree comforting that we shall not die simply from old age.

In a recent contribution on "Neurologic Problems Past Fifty", the enumeration of which is not particularly germane to this discussion, Moore[14] has made two important observations. "When those diseases which ordinarily occur in the earlier decades of life make their appearance at the age of fifty, the symptoms and signs are frequently altered or so different as to cause many commissive and omissive errors in diagnosis. Among the vascular and degenerative diseases, some of the commonly anticipated conditions may stimulate, disguise or occur concurrently with other disease entities not usually suspected."

We are in a vitamin age—all have seen the immediate effects of vitamin B complex in certain types of deafness; vitamins A and D in infections of the external and middle ear. Covell[15] has proven the effects of avitaminosis on various otologic structures and function in careful animal experimentation. It is unfortunate that the commercialized and expensive dosage has not and cannot be prescribed and directed in human patients with more than moderate accuracy.

In personal clinical studies, or in laboratory investigation, the otologist would do well to review the four groups of involuntary processes, from embryonic life to death, pointed out by Piersol[7]:

1. Numerical atrophy (loss of the power of cell division).
2. Quantitative atrophy (reduction in the size and number of parenchymatous cells).
3. Shrinking and condensation of intercellular substance.
4. Vascular changes (vessel collapse and obliteration of lumen).

Such changes furnish a valuable guide in determination of reconstructive and nutritional direction of the ear-sick patient. The study must not only include morphologic changes in the hearing apparatus but replacements of trophic deficiency and appropriate therapeusis.

Perhaps this will furnish sufficient pathologic background for study of the obvious symptomatic ear reactions.

Otology of the aged presents three pictures of interest: (1) Disturbances in the external ear, canal and auricular integument; (2) the long continued middle ear discharge of chronic otitis media, and (3) the somewhat baffling symptom-complex of progressive deafness. Perhaps it is not presumptive to touch lightly upon the first two, give chief place in the Geriatric tribunal to the last, progressive deafness.

1. *External* otitis is a common offender. Eczema and furunculosis in their variations have ever been present. Therapeutic measures are similar in every age, however, with certain reservations—absorption and elimination are sluggish in sclerotic tissues and those with beginning atrophy; in the aged sensations to pain, heat and cold are less acute. Safe limits in traumatism and topical applications must be selective. An otologist realizes how quickly a traumatized auricular canal will ooze and how slowly this will cease,—how readily traumatic blebs will appear on an induced tympanic myringitis. Therapeutic agents parallel the patient's age in sluggish response. Probably telangiectatic and angio-neurotic

14. Moore, Matthew T.: Neurologic Problems Past Fifty. *Penna. Med. Jour.*, November, 1940.

15. Covell, W. P.: Pathologic Changes in the Peripheral Auditory Mechanism Due to Avitaminoses. (A, B Complex, C, D, and E), *The Laryngoscope*, Vol. L, No. 7, July, 1940.

changes present the most baffling physiologic disarrangement to manage, and here again sedation must be guarded and both systemic and topical medication cautious. Abrasions heal slowly—absorption in even minor surgery is protracted. Even peripheral disturbances are consequential in the constant watch for initial malignancy.

2. Fascinating subject that it is, infection of the middle ear, comprising, as you know, the eustachian tube, tympanum and mastoid, can likewise receive but passing attention. According to Wittmaack's view, the two types of infantile otitis media have had much to do with both mastoid pneumatization and its later pathology. The role of squamous epithelium in relation to cholesteatomata has been impressive and is generally a sequence of tympanic perforation. The cautious otologist, in planning his middle ear campaign, must study these types of perforation—lateral wall, central and attic; the first, productive of cholesteatoma; the second, rather automatic in its self determination, and the latter a true geriatric problem if it has occurred in the neighborhood of the stapes.

Middle ear infection in its relation to deafness is focally consequential, but is not entirely appropriate to this discussion, which would travel from the surgical, X-ray and radium measures in the nasopharynx, through the middle ear and at least the antrum of the mastoid, and leave one stranded in the polymorphous maze of retraction, adhesion, sclerosis and ankylosis of the ossicular chain. The watchword in middle ear suppuration is free and adequate drainage. Even aged patients will usually bear well whatever local or general anesthesia is necessary in obtaining this. Reserve topical measures, iodine powders, ionization, etc., for the follow up. It will be noted that middle ear infections of the aged are a sequence of infantile and youthful dyscrasias, rather than *de novo* geriatric.

3. *Progressive Deafness and Otosclerosis.* This is the vital syndrome in the problems of aging—and its nature, medical and surgical therapeusis, and economic management—the goal of this geriatric preamble.

Otosclerosis and progressive deafness are not synonymous titles, though frequently so regarded. Otosclerosis does present one type of progressive deafness, but progressive deafness need not be otosclerotic. It might be adhesive in the middle ear or perceptive in cochlear degeneration.

In recent months, speakers have courageously classified three types of deafness, which might almost be crudely represented diagramatically—anterior, middle and posterior:

1. Conductive, the property of the component parts of the middle ear.
2. The progressive osseous change in the labyrinthine capsules termed otosclerosis, and
3. Changes in the cochlea and perceptive apparatus, usually degenerative (or schematically visualized— anterior conductive, middle otosclerotic, and posterior nerve degenerative).

Consensus of opinion has established rather definite etiology for these three types: Conductive deafness (including the adhesive and retracted middle ear): from the nasopharynx and eustachian tube. Otosclerosis: familial transmission, toxemia, infections, adolescence and the pregnancy complex. Perceptive or Internal Ear Deafness—traumatism and neurologic influence from the higher centers.

Nager[16], whose laboratory procedures have always represented simplicity as well as finality to visiting otologists, studied over 1,100 cases of otosclerosis, and found that the disease began in 50 per cent of all cases between sixteen and thirty years, and in 14 per cent prior to that age.

Otosclerotic pathology presents a deep and involved study. While the osseous changes, linked to the atypical cartilaginous development in fissula ante fenestrum and fossula post fenestrum, are usually linked to the labyrinthine capsule and stapes base, they may involve and even fill the scala tympani, and in exceptional cases include the semi-circular canals.

The classic definition of Cahill[17] still pertains: "Otosclerosis clinically presents an ankylosis of the stapes, progressive deafness usually bilateral, and a severe tinnitus, yet with normal membrances and patent eustachian tubes. It must satisfy the Bezold triad of lengthened bone conduction, a negative Rinne test and elevation of the lower tone limits, and there should probably accompany it the paracusis of Willis, meaning the ability to hear conversation better in the presence of a noise, and the

16. Nager, F. R.: Clinical and Pathologic Anatomy of Otosclerosis. *Acta Otolaryngol.*, 27:542, 1939.

17. Cahill, H. P.: Otosclerosis. The Nose, Throat and Ear and Their Diseases. Jackson & Coates, Philadelphia, W. B. Saunders Co., 1929, p. 503.

XUM

pinkish tinge over the promontory, representing the active underlying osteoporosis."

This is a perfect "tabloid" symptomatology. If the old country physician could practice medicine with only Dovers' powder and calomel for drugs, the otologist has a dependable library on this phase of progressive deafness in the single extended paragraph.

In spite of the rather hopeless picture of otosclerosis pervading the medical mind, four important things have happened in recent times:

1st. Fistulization: Surgery has definitely demonstrated that in typical otosclerosis with preserved bone conduction, hearing is really there, though temporarily locked up. The long deafened patient's recognition of this on the operating table is absolutely dramatic.

2nd. The observation studies of Crowe[18] and his associates upon 15,000 patients, 3,000 of them children, has been convincing that progressive deafness usually commences in the middle ear, and the perceptive or internal ear group hold a far smaller percentage in the total than usually supposed.

3rd. The loudness balance technique and masking of tinnitus has contributed much in the differentiation of nerve lesions, under the development of Fowler[19], Hughson[20] and others. In the introduction to a forthcoming abstract review of Progressive Deafness and Otosclerosis, your speaker has awarded the 1940 Oscars, "a la Hollywood," to—

1st. Advances in loud balance technique and tinnitus analysis;

2nd. The clarified management of pharyngeal and tubal lymphoid tissue;

3rd. Precisional understanding in the use of the newer biochemic remedies, and

4th. The Covell studies in avitaminosis.

In the analysis of tinnitus, which invariably increases deafness, two types have been recognized—the vibratory and the non-vibratory. The first masks easily and the second with difficulty. An elaborate technique, however, has been developed, which has permitted an accurate interpretation of central deafness, and incidentally has indicated what types of deafness could and could not be relieved. Further study will show the absence of conflict between Crowe's view on perceptive deafness and the Beasley conclusions from the National Health Survey on deafness as to the preponderance of nerve deafness, which is contrary to the popular belief. Perhaps there has not been a clear differentiation between otosclerosis and perceptive deafness.

Research studies, notably on the Western Coast, have presented a challenge that otosclerosis may be reversed, under non-surgical therapeusis, notably vitamins, nutrition, calcium and phosphorus.

You will agree that this arch invader of human hearing, otosclerosis, whether numerically isolated in laboratory research or comprehensively combined with other types of progressive deafness, and that in spite of the youthful invasion maintained by Nager, is the real aging problem in otology.

To make the picture complete, it would seem appropriate to tabulate relief measures in deafness in a generalized way:—

1st. Systemic reorganization, biochemical help, dietary regime, psycho-analysis.

2nd. Conclusive research study of the newer agents, thyroxin, prostigmin, estrogenic substances, endocrines, vitamins and certain specific medication.

3rd. Fistulization or fenestration by the Sourdille, Holmgren and Lempert methods; closure of the Round Window by the Hughson technique; general surgical control of infection.

4th. Every type of mechanical hearing appliance and their adequate prescription.

Sufficient material would seem to have been presented in the foregoing to adequately suggest the etiology, pathology, symptomatology and therapeutics of the otologic phase in geriatrics, to one interested in such specializing. Enough attention has hardly been devoted to the surgery of the aged.

Barney Brooks[21] has contributed elaborate studies on the results of surgery in persons of advanced age, including operations upon otolaryngologic patients in the higher age groups. He has stated that in the group of 293 operations on patients over seventy years of age "it appears that surgical diseases in the higher age groups are associated with a relatively high mortality but the deaths which could reason-

18. Crowe, S. J.: Recognition, Prevention and Treatment of Hearing Impairment in Children. *The Laryngoscope*, Vol. L, No. 7, July, 1940.

19. Fowler, E. P.: Head Noises. Significance, Measurement and Importance in Diagnosis and Treatment. *Arch. Otolaryngol.*, Vol. 32, No. 5, November, 1940.

20. Hughson, W., and Witting, E. G.: Estimation of Improvement in Hearing Following Therapy of Deafness. *Ann. Otol., Rhinol. and Laryngol.*, Vol. 49, No. 2, June, 1940.

21. Brooks, Barney: Surgery in Patients of Advanced Age. *Annals of Surgery*, April, 1937, pp. 481-495.

bly be attributed to operative treatment are remarkable infrequent."

The speculation by Brooks upon the effects of shift in the age composition is of interest. In general, the obstetricians and pediatricians could anticipate a diminution in number of births and children; internists could look forward to an increase in the incidence of degenerative diseases; general surgeons could look for an increase in their responsibility because of later incidence of surgical disease; the urologists would be busy with a larger group of old men, but the gynecologists would probably not be seriously over-worked with their even larger group of old women; ophthalmologists might look forward to performing many operations for cataract but the otolaryngologists would do relatively few operations on ear, nose and throat to compensate for diminution in tonsillectomies and adenoidectomies; the orthopedist is already aware of the decrease in tuberculosis; the neurologic surgeon may expect increase in number of tic operative cases and the plastic surgeons reconstruction after epitheliomata, but fewer operations for harelip and cleft palate. The internist's function assumes greater proportions. It devolves upon him to determine proper preparation of these aged patients for the combination of trauma, drugs, confinement, strange environment, irregularity in nutrition and emotional upset constituting a surgical operation.

Returning to Brooks'[21] general discussion.

With an increase in people of sixty-five years of age, there will be not only an increase in higher age diseases, but an increase in the number of advanced age patients suffering from all age diseases. With the increased higher age limit, there would be more operating surgeons of advanced age, until a sympathetic public has decreed his retirement. Surgery itself is in a period of expansion, not only in new operative procedures for new conditions but also for old conditions that were not previously considered surgical. Political interest in medical and surgical care for the aged and old age pensions are increasing.

The writer finds himself in agreement with the opinion that the older person can now be operated with increasing safety, with greatly improved preoperative and post-operative safeguards. Anesthesia of every form, with gentle administration, is increasingly more safe. The tissue reaction is less sensitive, and shock thereby diminished. Hemorrhagic conditions can be controlled by previous study and emergency safeguards. Absorption and recovery are slower and that forces a delicate judgment as to what is justifiably necessary in surgery.

Now, in conclusion, let us consider the role of the otologic geriatrician whose practice bids fair to supercede in years to come that of the pediatrician.

An eminent statesman physician discussed with a group, some twelve years ago, the phases of successful medicine—dividing it into the art of medicine, the laboratory of medicine, and the priestcraft of medicine. To a similar group of medical students quite recently, he said he must re-classify medicine of today and tomorrow with two groups—the priestcraft of medicine and preventive medicine. Guardedly this applies to the field in discussion.

First, and foremost, the specialty of advanced age otology requires the otologist to also be in degree an internist and his priestcraft judgment, tact and gentleness must still guard the economic readjustment as well as otologic welfare of his patient. There are many fields of research wide open—arterio-sclerotic, fibrotic and osteogenetic activity in the aging process; drug idiosyncrasies; further clinical studies on ciliated activity; allergic reaction, focal infection, fluid balance in the maturing patient. The management of psychic imbalance, sexual idiosyncrasy, and the various phobias offer another field.

Above all, and finally, it must be remembered that we are discussing a period of life which requires the most refined art of medicine, rare experience in diagnostic ability, exquisite skill in therapeusis, and, again emphasized, most careful judgment as to justifiable surgery in the field of otology.

1912 Spruce Street.

XUM

HAVERHILL FEVER FOLLOWING RAT BITE

ANDREW D. HART, JR., M.D.,
Charlottesville, Virginia.

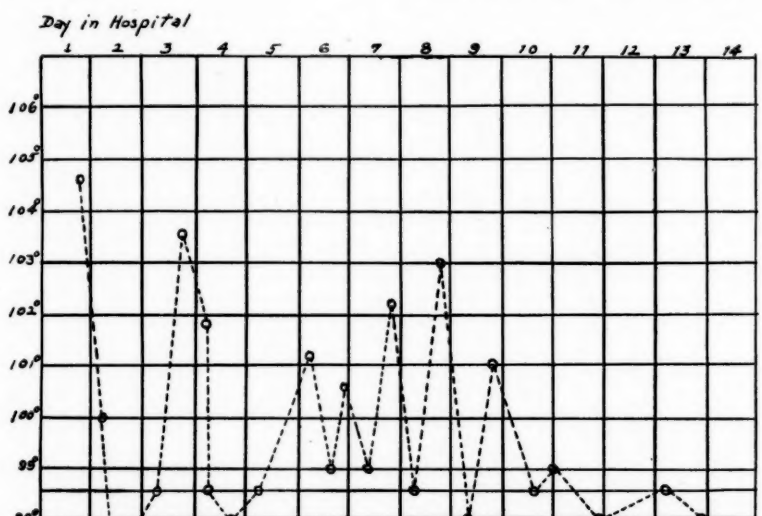
Haverhill Fever[1, 2] is an acute infectious disease accompanied by symptoms of sepsis and identified by evidences of generalized infection with the bacterial organism Streptobacillus moniliformis. The only epidemic of the disease that has been reported[1] was due to a milk-borne infection, possibly through a contamination of the milk supply by rats. Sporadic cases have been described following the bite of various animals, most commonly the rat. Investigations[3] have shown that the common rat (mus decumanus) harbours the organism Streptobacillus moniliformis in its nasopharynx in a relatively high percentage of instances.

REPORT OF CASE

J. A. B., an eighteen-year-old college student, was admitted to the University of Virginia Hospital on December 11, 1940. He complained of fever and chills of twelve hours' duration. Three nights before admission he had been bitten on the nose by a rat. This history was verified by an almost indisputable description of the event and equally plain evidences in the wound. A roommate, attacked the following night, showed similar local lesions but developed no further disease.

On admission, physical examination revealed prostration without shock. The temperature was 105.6; the pulse 120; respiration 20 per minute; a white blood cell count was 23,200. No other findings of importance were present.

COURSE OF THE DISEASE:—During the first week of hospitalization the patient remained septic and moderately ill. His temperature showed remissions and exacerbations as illustrated in Figure 1. Generalized joint pains developed, without specific physical involvement of any joint; the knees were painful on motion but no swelling occurred. On the sixth day a maculo-papular, morbilliform eruption appeared on the face and on upper and lower extremities. This rash was almost indistinguishable from that commonly described in Rat Bite Fever (Sodoku) due to infection with Spirillum minus.



TEMPERATURE CHART

Figure 1.

*From the Department of Student Health, University of Virginia School of Medicine, Charlottesville, Va.

Read before the Virginia Section of the American College of Physicians, March 13, 1941.

By the tenth day it had largely disappeared, concomitantly with general symptoms and with the febrile reaction. On the seventh day of hospitalization 0.3 gram of neoarsphenamine were given intravenously, without appreciable immediate effect. The patient was discharged from the hospital on December 23, 1940, twelve days after admission. Subsequent observation revealed no return of symptoms or signs.

LABORATORY:—As noted, the initial white blood count was 23,200. Subsequent counts showed a gradual subsidence to normal figures. Differential blood counts and blood smears showed no distinct abnormality. Examination of the blood by Wright stained smears and by darkfield illumination was performed on the night of admission and showed no evidences of spirochaetal or malarial parasites. Subsequent darkfield examinations of cutaneous lesions showed no spirillum minus organisms. Weil's disease was excluded by appropriate studies.

A mouse inoculated on December 11 did not become sick; when examined two weeks later, smears from the heart's blood showed a few streptobacilli. Mice inoculated with venous blood taken at the height of the infection (12-18-41) developed characteristic evidences of sepsis[4] from Streptobacillus moniliformis—malaise, arthritis; and after death, positive smears, and cultures that grew colonies morphologically and bacteriologically characteristic of Streptobacillus moniliformis. On the tenth day of illness the patient's blood serum showed agglutinins against the isolated strain of streptobacilli organisms in dilutions of 1/10 to 1/40 to 1/80 (with two antigens). A control test with normal blood was negative. A guinea pig inoculated on the night of the patient's admission to the hospital (12-11-40) died one month later. Smears from the ascitic fluid showed many streptobacilli.

COMMENT

Generalized infection with Streptobacillus moniliformis (Streptothrix multiformis, Streptothrix muris ratti, Haverhillia multiformis, Actinomyces muris) has been recognized since an original description by Schottmuller[5] in 1914. Since that time, sixteen sporadic cases have been reported, the majority following rat bite. Five additional cases have been described in which there was probably a mixed infection with Spirillum minus, the cause of Rat-Bite Fever (Sodoku).

In 1926 an epidemic[1] occurred in Haverhill, Massachusetts, which affected eighty-six persons; in twelve of these a Streptobacillus organism was isolated[2] from the blood or joint fluid. A comprehensive review of the pertinent literature on this subject has recently been published by Farrell, Lordi, and Vogel.[6]

Haverhill Fever following animal bite is to be distinguished from the clinical syndrome of Sodoku or Rat-Bite Fever, which occurs perhaps more frequently in sporadic instances. Since 1916, when its etiology was proven by Futaki'[7] 111 cases of Sodoku have been reported. The chief clinical differences between the two infections have been summarized in Table 1. Since a mixed infection may occur, the possibility of ambiguous observations must be kept in mind. This point has been emphasized by Allbritten,[8] in a recent extensive review of the available data on published cases of both types of infection.

TABLE 1.—CLINICAL DIFFERENCES IN HAVERHILL FEVER AND SODOKU

	HAVERHILL FEVER	SODOKU (RAT BITE FEVER)
Infecting organism	Streptobacillus	Spirillum
Portal of entry	Animal bite—milk borne	Animal bite
Incubation period	Short, 2-10 days	Long, 10-20 days or more
Wound healing	Prompt, as rule	Induration and adjacent lymphadenitis
General symptoms	Prompt, severe	Delayed—less severe
Arthritis	Common	Rare
Rash	Morbilliform, petechial	No petechiae
Leukocytosis	Marked	Slight
Treatment	Not established	Arsenic

The ultimate differential diagnosis of relapsing fevers following animal bite depends, as in other instances, on laboratory studies. The accompanying outline of procedures (Table 2) is taken directly from the published paper of Allbritten, Sheely, and Jeffers.[8] In uncomplicated cases the diagnosis should not be difficult. Acute infectious arthritis, rheumatic fever, and undulant fever must be considered It may be necessary to exclude Weil's Disease and Relapsing Fever. The history is extremely important.

A specific treatment for Haverhill Fever has not been established. Arsenic preparations have been reported to be of benefit in some instances. Thymol

TABLE 2.—LABORATORY DIAGNOSIS OF HAVERHILLA MULTIFORMIS AND SPIRILLUM MINUS INFECTIONS

PROCEDURE	SPIRILLUM MINUS	HAVERHILLA MULTIFORMIS
Blood culture	No growth on ordinary mediums	Draw blood at height of fever; add to beef bouillon: characteristic growth in 24 to 96 hours; ascitic fluid or serum enrichment of mediums needed for all sum cultures
Animal inoculation	Inoculate mice and guinea pigs intraperitoneally with 2 cc. of citrated blood or material aspirated from bite wound or adjacent enlarged lymph node; daily dark field examination of inoculated animal's blood for Spirillum minus; if Spirillum minus is found before 5th day, it is probably a natural infection	Inoculations with patient's tissue fluids give negative results; inoculations of cultures into mice result in polyarthritis and death; not pathogenic for rats and guinea pigs
Tissue fluids	Dark field examination of patient's blood; serum from wound or involved lymph node (rarely positive); stained preparations of tissue fluids by Wright's, Giemsa's or Fontana's stain (rarely positive)	Centrifuge joint fluids and examine smears; take culture of joint fluid in ascitic or serum bouillon
Serologic reaction	Technically difficult and of questionable value	Positive agglutination, precipitin and complement fixation may offer confirmatory evidence

Taken from Allbritten, F. F.; Sheely, R. F.; and Jeffers, W. A.: Haverhillia Multiformis Septicemia: Its Etiologic and Clinical Relationship to Haverhill and Rat-Bite Fevers, *J.A.M.A.*, Vol. 114:24, June 15, 1940.

has been used[6] with questionable results. In the case described in this report recovery was thought to have occurred independently of any medication.

SUMMARY

1. An instance of Haverhill Fever following rat bite is reported.
2. Considerations involved in the occurrence, and diagnosis of the disease have been discussed.
3. An effort has been made to further clarify the nature of infections following animal bite.

REFERENCES

1. Place, E. H.; Sutton, L. E., and Willner, O.: Erythema Arthriticum Epidemicum: Preliminary Report, *Boston M. and S. J.*, 194:285, 1926.
2. Parker, Frederick, Jr., and Hudson, N. P.: The Etiology of Haverhill Fever (Erythema Arthriticum Epidemicum), *Am. J. Path.*, 2:357, September, 1926.
3. Strangeways, W. I.: Rats as Carriers of Streptobacillus Moniliformis, *J. Path. and Bact.*, 37:45, July, 1933.
4. Van Rooyen, C. E.: The Biology, Pathogenesis and Classification of Streptobacillus Moniliformis, *J. Path. and Bact.*, 43:455, November, 1936.
5. Schottmuller, H.: Sur Aetiologie und Klinik der Blisskrankheit, *Dermat. Wchnschr.* (supp.), 58:77, 1914.
6. Ferrell, Elliston: Lordi, G. H., and Vogel, Joseph: Haverhill Fever: Report of a Case with Review of the Literature, *Arch. Int. Med.*, 64:1, July, 1939.
7. Futaki, Kenzo; Takaki, Ftsuma; Taniguchi, Tenji, and Osumi, Shimpachi: The Cause of Rat-Bite Fever, *J. Exper. Med.*, 23:249, February, 1916.
8. Allbritten, F. F.; Sheely, R. F.; and Jeffers, W. A.: Haverhillia Multiformis Septicemia: Its Etiologic and Clinical Relationship to Haverhill and Rat-Bite Fevers, *J.A.M.A.*, 114:24, June 15, 1940.

OVARIAN PREGNANCY

A Review of the Literature and a Case Report*

ROSS B. WILSON, M.D.,
Philadelphia, Pennsylvania,
and
SPOTSWOOD ROBINS, M.D.,
Richmond, Virginia.

Mercerus and St. Meurice in the seventeenth century first described ovarian pregnancy, but in 1835, Velpena concluded that all purported ovarian pregnancies reported up to that time gave inconclusive evidence, and, consequently, could not be classed as such. That these cases were dermoid cysts is the conclusion of authorities[1]. It was not until 1899 that that VanTussenbroek produced strong evidence, and Thompson, three years later, gave indubitable proof of the existence of ovarian pregnancy[2].

Wollner in 1932 reviewed the literature; and from eighty-seven cases studied, could cull only forty-eight undeniable examples[3]. Eight years later in 1940, Russell and Black were able to add only four more, including one of their own, bringing the total to fifty-two. Since the work of Russell and Black, we have been able to find only seven additional ovarian pregnancies, including one of our own[9, 10, 11, 14, 15], which makes an aggregate of fifty-nine.

The case of Spears deserves especial notice since there was a simultaneous rupture of an ovarian cyst in the other ovary at the time of the rupture of the ovarian pregnancy[7]. Pudney's case concerned a simultaneous occurrence of left ovarian and right tubal pregnancies. Milner and Bowles reported concurrent right ovarian and intrauterine pregnancies[15].

Obviously this clinical entity is rare, and each additional proved case deserves reporting.

To be labeled undeniably an ovarian pregnancy, each one must meet four requirements:

(1) The tube on the same side must be intact both macro- and microscopically.

(2) The fetal sac must occupy the site of the ovary.

(3) It must be connected to the uterus by the ovarian ligament.

(4) Ovarian tissue must be found in the sac[1, 2, 3, 4].

*From the department of Gynecology, Service A, of the Philadelphia Lying-In Hospital.

Read before the Richmond Academy of Medicine on May 27, 1941.

It is felt that the following case report meets all the above criteria:

Mrs. E. T., a forty-two-year-old, divorced, white female, entered the Philadelphia Lying-In Hospital on November 6, 1939, on the Welfare Service. At that time she complained of L.L.Q. pain of two months' duration. Two months prior to admission, not having missed any menses, she suffered a severe attack of L.L.Q. pain radiating to her rectum and followed by marked vertigo. There was no syncope. Since the initial pain episode, there have occurred occasional mild attacks of L.L.Q. pain without radiation. Her L.M.P. was October 29, 1939, and for the past six months she has had increasing menorrhagia without prolongation.

Her past history was irrelevant.

Marital and Menstrual Histories: She was married at twenty-one years of age, now divorced. She had two full-term pregnancies followed by easy spontaneous deliveries. Her menarche occurred at eleven years, menses were always of the twenty-eight-day, four-five-day type with slight cramps. There had been no leucorrhea.

The gastrointestinal and cardio-respiratory-vascular histories were negative. Her urinary history revealed frequency without other symptoms.

Physical examination: T 98.6, P 84, R 20, BP 128/70. She was a well developed and nourished, slightly obese, white female, lying flat on the table, in no pain. Age forty-two years. *Her head, eyes, ears, nose, mouth, throat, neck, chest, breasts, heart,* and *lungs* were essentially negative. Abdominally could be felt a soft, non-tender, irregular mass coming from the pelvis and reaching to two fingers' breadth above the symphisis in the midline. Bimanual pelvic examinations revealed a parous introitus, no pathology of the glands, a lacerated pelvic floor, and a slight rectocele and cystocele. The cervix was posterior, firm, free, irregular, and contained frequent Nabothian cysts in the anterior lip. The uterus was irregularly enlarged to the size of a two and a half to three months pregnancy, soft, free, non-tender, and

anterior. Adnexa: the right side was negative; the left side contained a fixed, firm, non-tender oblong mass the size of a gall-bladder and apparently continuous with the uterus.

Laboratory work: On November 7, 1939, the hemoglobin was 65 per cent, the rbc 4,700,000; the wbc 8,350; and the Wassermann was positive; the urine was straw colored, acid, specific gravity 1.016, sugar and albumin negative.

The diagnosis was (1) uterine fibroids complicated by a possible left ectopic pregnancy and a chronic endocervicitis. Since the pregnancy was doubtful, a Friedman was done and reported negative. Consequently, on November 10, 1939, a dilatation and conization of the cervix, bilateral salpingo-oophorectomy, supravaginal hysteromyomectomy and appendectomy were done. At operation was found, in addition to the fibroids, a twice normal size left ovary containing a hemorrhagic area the size of a fifty-cent piece hollowed out in the center. The left and right tubes and right ovary were apparently normal. The left tube was not adherent to the ovary. In the cul-de-sac were found an old organizing blood clot the size of a plum and a degenerating fetus about 5 cms in length. The fetus unfortunately was lost between the operating room and the pathology laboratory. Postoperatively the patient's course was uneventful except for a mild postoperative reaction and on the eighth day a mild parametritis. She was discharged on the fourteenth postoperative day, having been up and about the ward for two days. Examination on discharge revealed a well-healed abdomen, a well-suspended but slightly fixed cervix, and a moderate thickening without tenderness in the parametria.

The pathological report was as follows: left ovary with large clot attached without epithelial lining between the two, in the clot were areas of degenerated fetal villi with some of the cellular elements still present; the left tube was larger than the right with longer and more edematous papillae and a few areas of squamous epithelium in the stroma; right tube and ovary normal; uterus contained multiple fibroids; and the appendix was normal.

Diagnosis: (1) Ovarian pregnancy, old, left.
(2) Uterine myomata.
(3) Normal appendix.
(4) Normal right tube and ovary.

COMMENT

Ovarian pregnancy may be divided into two types: (1) intrafollicular and (2) superficial; or primary and secondary. In the primary, the fertilized ovum undergoes its entire growth in the ovary; in the secondary, the fertilized ovum undergoes its early development in some nearby structure or cavity as the salpinx, and then becomes implanted on the ovary. Obviously only the primary type can be classified as a true ovarian pregnancy.

Macroscopically, due to their close resemblance, it is difficult to distinguish ovarian pregnancy from chocolate cyst commonly called endometriosis. In the intra-follicular or primary type, there is a little tendency to rupture—to which tenet I cannot subscribe—since the ovarian connective tissue is stimulated by and soon surrounds the ovum. Later the ovum dies because of hemorrhage in the fetal sac wall and chorion frondosum producing a pocket of old, dark blood which is grossly identical to a chocolate cyst.

As stated before, I cannot believe in the conception that primary ovarian pregnancies have little tendency to rupture. Every reported case, except one[12], and my own, reviewed by me, had ruptured before operation and during the first trimester of pregnancy.

The etiology of ovarian pregnancy in addition to the etiology of ectopic gestation as a whole has two theories: The first is based on the rupture hole of the follicle being plugged by a blood clot. This clot would obviously keep out any spermatozoon as well as keep in the ovum. The other is based on a slow rupture of the follicle whether it be due to a too thick tunica albuginea or low fluid pressure within the follicle. In either instance there would be less tendency for the ovum to be expelled. For a more detailed explanation, I refer you to an excellent article by Wollner in the *American Journal of Obstetrics and Gynecology* for 1932.

The prospects for a normal, healthy child if carried to term are illustrated by Sittner[13]. He reviewed three separate series of such cases; and in the first, of eighty-five ectopic pregnancies with viable feti reviewed, only thirty-six survived the first month; in the second, only four out of eight lived beyond the first month; and in the third, only eleven of fourteen lived. Schorsch[13] believes only 10 per cent of ectopic feti at term can survive, and Winkel[13] estimates that 50 per cent are malformed. The treatment of ovarian

pregnancy is extirpation of at least the offending ovary.

CONCLUSIONS

1. A case of true ovarian pregnancy complicated by uterine fibroids is reported.

2. Ovarian pregnacy tends to rupture during the first trimester.

3. Ovarian pregnancy cannot be differentiated absolutely from tubal pregnancy before operation.

4. To differentiate a primary from a secondary ovarian pregnancy, a thorough microscopic examination of the ovary and corresponding tube is necessary.

5. The treatment is operation as soon as the diagnosis is suspected and the patient is in condition.

BIBLIOGRAPHY

1. Williams, J. W.: Obstetrics, page 682, D. Appleton and Co., 1920.
2. Litzenberg, J. C.: Davis' Gyn. and Obs., I, II, 8, W. F. Prior Co., Inc., 1937.
3. Titus, P.: The Management of Obstetric Difficulties, page 267, C. V. Mosby Co., 1937.
4. Schumann, E. A.: A Textbook of Obstetrics, page 346, W. B. Saunders Co., 1936.
5. Wollner, A.: *Am. J. Obs. and Gyn.*, 23; 262, 1932.
6. Likes, L. E.: Ovarian Pregnancy; *S. G. and O.*, 53; 643, November, 1932.
7. Spears, B. H.: *Am. J. Surg.*, 43:132, January, 1939.
8. Russell, P. B., and Black, W. T., Jr.: *Southern Surgeon*, 9:114, February, 1940.
9. Davis, C. H., and Stevens-Young, V.: *Am. J. Obs. and Gyn.*, 39:1063, June, 1940.
10. Schenck, S. B., and Grundfast, T. H.: *Am. J. Obs. and Gyn.*, 39:713, April, 1940.
11. Frundenfeld, J. C., and Webb, A. N.: *Am. J. Obs. and Gyn.*, 39:517, March, 1940.
12. Wenzkowsky, M. K.: *Zentralblatt fur Gynakatogie*, 54:600, March, 1930.
13. Schorsch, W.: *Archiv fur Gynkalogic*, 162:371, 1936.
14. Nowakovsky, S.: *Am. J. Obs. and Gyn.*, 41:156, January, 1941.
15. Milnor, G. C., and Bowles, H. E.: *Am. J. Obs. and Gyn.*, 40, 511, September, 1940.

CERVICAL FIBROMYOSITIS AND HEADACHE*

BEN L. BOYNTON, M.D.,
Norfolk, Virginia.
Director Physical Therapy Department, Norfolk General Hospital;
Instructor in Physical Therapy, Medical College of Virginia, Richmond.

For many years the patient who complained of headache was, in the mind of the general practitioner, a "headache" to care for. In recent years our attention has been directed to this and that cause as being responsible for headache; thus we have the headache due to histamine hypersensitivity, there is the headache due to intracranial neoplasms, there is the "old friend" known as migraine, the headache due to eye-strain, the headache associated with sinusitis, and so on *ad infinitum*. When all known causes have been considered and eliminated, there still remain quite a considerable number of patients who complain of headache; it is about this group that we wish to discuss cervical fibromyositis as a common etiological agent.

Fibromyositis may be defined as the presence of small, discrete nodules or larger fibrous plaques in the muscle belly and in the sarcolemma. Fibromyositis, wherever it occurs, is thought by some to be the result of severe or repeated minimal trauma which brings about minute tears in the muscle tissue, giving rise to these nodules. Another theory as to the etiology of these nodules is that they result from local inflammatory processes, possibly the result of the action of non-pyogenic organisms of relatively low virulence. These abnormal deposits interfere with the proper functioning of the muscle and lead to spasm which in turn leads to pain and thus to more spasm, and so on. When any marked degree of fibrositis occurs in the cervical muscles occipital headache frequently follows. Headaches of this type are intermittent in character but tend to occur during periods when the patient is under stress and strain. The patient may or may not complain of an associated stiffness in the neck; the great majority of patients will report some relief of the headache by rubbing the back of the neck. Occupation seems to bear some relation to the incidence of this condition as it is seen most often in those who do not lead a particularly active life; school teachers, office workers, university students, traveling men, and so on are frequent sufferers.

In the history, the patient will usually state that the headaches come on in the middle of the day or in

*Read before the Norfolk County Medical Society, May 19, 1941.

the evening. Occasionally the patient will awaken in the morning with the headache. The pain is described as starting in the back of the neck and working upward and forward over the head (suggesting the distribution of the greater and lesser occipital nerves and the third occipital nerve). One or both sides may be affected, although it is rare to have one side only; the pain, however, is usually worse on one side than on the other. Common analgesics such as aspirin give partial relief.

Examination of the patient will clinch the diagnosis if the examiner is gentle and searching in his palpation of the cervical muscles. Where tenderness is acute it may be necessary to obtain relaxation of the muscles before the nodules may be satisfactorily palpated; the use of heat for a short time will usually suffice for this purpose. In the actual technic of palpation great care must be taken that the touch at first be light, gradually becoming deeper until the entire thickness of the muscle is palpable, yet without eliciting defensive spasm. The findings are several discrete, or, in the more advanced cases, confluent nodules or plaques which are definitely palpable in the belly of the muscle. Pressure over these nodules causes them to slip out from under the palpating finger. The patient may have much or little pain when the nodules are being palpated, but pain is always elicited when palpation is made at the time the patient is suffering from the headache. The distinction between the presence of these nodules and the presence of posterior cervical adenopathy is not difficult, as the former condition is within the belly of the muscle, whereas, the latter is relatively superficial.

Histological examination of these nodules has been made by various investigators. Their findings do not agree, probably because of the fact that the specimens for such study were obtained at different stages of reaction. It may be said, however, that these nodules are not pure scar tissue; on the contrary, they are softer and may be completely obliterated by properly directed massage.

This brings us to the consideration of treatment for this condition. It has been our experience that by means of deep heat and deep friction massage over the neck and shoulders it is possible to disrupt these nodules. There are two main objects in the treatment: First, is the relief of pain. Heat and very gentle massage will bring this about within a day or two. Second, is the prevention of recurrence of pain. Here the deep friction massage and the actual disruption of the nodules is accomplished. Treatment is continued until palpation no longer discloses discrete nodules. This may often be accomplished within a week or ten days in the early case; in the more advanced case it may require from two to four weeks. The usual period is ten days to two weeks.

A more radical form of treatment, but in some cases efficacious, is the removal of these nodules surgically.

CASE REPORTS

Mrs. T. J., age thirty-four. First seen May 23, 1940.

Chief complaint: Pain in back of head since February, 1940. Occasional stiffness in neck.

Examination negative except for three or four small nodules palpable in the upper portion of the trapezius muscle on both sides.

Treatment: Deep heat and gentle massage every other day for four days. Pain was completely relieved, but patient was advised to have the nodules broken up. She returned on June 18, 1940, and this time she received deep heat and the deep friction massage. Four treatments sufficed to break up the nodules. The patient has been free of the occipital headaches since that time.

Miss M. P., age thirty-one. First seen on May 28, 1940.

Chief complaint: Acute wry neck, duration five days. Also gave history of recurrent occipital headaches for past several years.

Examination essentially negative except for marked spasm in upper right trapezius and sterno-cleido-mastoid muscles. Following heat, many nodules could be palpated in the neck and shoulders.

Treatment: Deep heat and gentle massage daily for three days, at the end of which time the patient was relatively pain free. This patient did not return for further treatment until February, 1941, when she suffered a return of the wry neck. The headaches had recurred off and on throughout the intervening eight or nine months. At this time (February, 1941) she was given eleven daily treatments and the nodules were broken up. She has been pain free since completion of treatment.

SUMMARY AND CONCLUSIONS

It is known that fibromyositis occurring in the neck is frequently provocative of reeurrent occipital

headaches. The mechanism of this type of headache appears to be pain referred along the course of the greater and lesser occipital nerves and possibly also the third occipital nerve. It is thought that such nerve irritation results from spasm in the muscles, due to the presence of the fibrous nodules and plaques which have been described.

Deep heat and deep friction massage play an important role in the relief of this condition. At first, pain must be relieved by means of heat and gentle massage; after this has been accomplished, it is essential that the fibrous deposits be dispersed by means of deep heat and deep friction massage. Recurrence of the pain is likely if the nodules are not obliterated.

Surgical removal of the offending nodules may be done, if the conservative treatment, as outlined, does not accomplish the desired result. Such a procedure is rarely necessary in our experience.

The incidence of this condition is far greater than has been generally appreciated; it is likely that a fair percentage of patients suffering with so-called "functional or nervous" headache actually fall in this group. The diagnosis is quite simple if the physician will take time to search for the offending nodules.

CHOOSING A METHOD FOR MASS X-RAYING OF SERVICE MEN

NELSON MERCER, M.D.,
Formerly Lieutenant Colonel, Medical Corps Reserve, U. S. Army,
Philadelphia, Pennsylvania.

INTRODUCTION

At least a million men are now in the Service who have not had chest X-rays made. To prevent spread of tuberculosis in the Army, Navy, and Marine Corps, therefore, it is inexcusable to induct millions more who have been proved free of the disease by X-ray films of their chests made prior to entry into the Service.

In the two Army Corps Areas where X-ray films of the chest have been made on all selectees and National Guardsmen prior to entry into Federal Service, rejections have averaged between ½ and 1½ per cent on X-ray findings alone. Therefore, it is estimated between 5,000 and 15,000 cases of pulmonary tuberculosis are now in the Service which should be found and weeded out at once before they have further opportunity to infect their brothers-in-arms.

The logical solution to this dilemma would be for the Government to purchase or rent as many mobile units of the rapid paper film method as may be needed to X-ray the chests of all officers and men not so examined, and also to X-ray all men prior to induction into service in the nine Corps Areas and our foreign possessions.

By this method only can we save our Government millions of dollars of taxpayers' money for hospitalization, compensation, and family allowances for those who develop tuberculosis in our Army, Navy, and Marine Corps during the present national emergency.

Proof of this conclusion is submitted in the following analysis.

CHOICE OF BEST METHOD

We can assume that it would be impractical to make a stereo pair on 14x17 cellulose film or even a single 14x17 plate on cellulose film of every soldier and sailor in the Service and every recruit, for the obvious and well-known reasons, of cumbersomeness, slow speed and high cost. In this discussion, therefore, only the three rapid low-cost methods are included, namely—the 35mm and 4x5 inch photofluorograph methods and the paper film in rolls.

Each of these methods is fast enough to serve the purpose, although in the case of the 4x5 photo method there may be limits imposed by the tube upon the rate of making exposures.

The cost of equipment required for each of the three methods varies widely. The 4x5 photofluorograph unit, without stereo attachment or processing equipment, is reported to cost in the neighborhood of $9,000. The 35mm unit is reported to cost about $6,000. The roll paper film unit, complete with processing equipment, is said to cost about $3,000. It may be assumed that wear and tear and depreciation on each of these units, exclusive of the tube, may be taken at 20 per cent per year.

The one item of cost which has been most prominently stressed in published articles has been that

of the raw materials used. The 35mm film is said to cost about one cent per exposure, the 4x5 film about five cents, and the paper film in rolls costs the Government twenty-five cents for each 14x17 radiograph.

This apparently wide difference in cost of film used is frequently cited as a strong argument for the use of either the 35mm or the 4x5 film. Seldom is any reference made to the importance of diagnostic accuracy when considering the final or total over-all cost of including a chest X-ray in the routine physical examination of our military men.

It has been repeatedly stated, and apparently accepted as true, that the average cost of admitting a case of tuberculosis into the military Service during the World War was somewhere around $10,000 per man to date (the final cost will probably never be accurately known, but the bill is still growing at the rate of forty million dollars a year). This means that it would have been worth $10,000 to Uncle Sam for each such case which could have been kept out of the Service.

There appears to be no reason to believe that the cost today in the present emergency will be any less than it was after the last war. We assume then that it is now worth $10,000, on the average, to exclude a case of tuberculosis which would break down in Service if admitted. If that is so, that fact has an important bearing upon the selection of the method to be used in the routine examination of all Service men.

There seems to be no disputing the statement that all of the three methods are capable of disclosing gross lesions in the thorax or that most minor lesions are also discoverable. In all cases of pathology, or suspected pathology, additional studies can be made by other methods, including a stereo pair of radiographs. The unfortunate fallacy of this procedure lies in the fact that only those cases in which definite or suspicious shadows are revealed on the first film will ever receive this further study.

The question becomes—how many cases will be missed entirely by each of the three methods and therefore receive no further examination? Obviously, none of these methods, nor any other method, is capable of disclosing *all* cases of pulmonary tuberculosis on a single plate or even on a single stereo pair.

The absolute accuracy of each of the known methods of X-ray examination is, as yet, undetermined. But many studies have been made, and ratings assigned, which express the judgment or opinion of the investigators. Probably few would find fault with ratings which place the various methods in the following order:

1. A complete and thorough X-ray examination, including preliminary study by fluoroscope, followed by stereoscopic pairs made at angles and in positions determined by the fluoroscopic study.
2. A stereo pair in P.A. position.
3. A single P.A. 14x17 radiograph on cellulose base film.
4. A single P.A. 14x17 radiograph on paper film.
5. A 4x5 photofluorograph.
6. A 35mm photofluorograph.

The first, second and third methods, just enumerated, are ruled out of the present consideration because of the very large numbers involved and the impracticability and prohibitive cost of applying these methods to such numbers.

The fourth, fifth and sixth methods have been rated in the order named, in respect to diagnostic accuracy, by several investigators. The paper film has been judged by many recognized authorities as comparable with cellulose base film. The two photofluorographic methods are claimed by their sponsors, and by workers who have used them, to come within varying percentages of accuracy or inaccuracy.

The enthusiastic proponents of the 4x5 method claim an accuracy, in disclosing minimal cases of tuberculosis, of as high as 98.5 per cent (Bridge: *Am. Rev. of Tb.*, Aug., 1940). Others claim an accuracy of 97.4 per cent (Douglas, Birkelo, Harmon and Vaughan: *Am. Jour. of Pub. Health,* Dec., 1940).

There seems to be a serious lack of detailed evidence as to the accuracy of the 35mm method. Spillman gives as his opinion that it is less than 90 per cent accurate (*Jour. A. M. A.*, Oct. 19, 1940).

Dearing and Turner, of U.S.P.H.S., (*Pub. Health Reports,* Dec. 27, 1940) reported a small survey in which 35mm and 14x17 films were compared by two readers with a resultant accuracy on the 35mm of 94.3 per cent by one reader and 88.6 per cent by the other. In other words, of all the significant lesions revealed by the 14x17 films, one reader found 94.3 per cent and the other 88.6 per cent of them in the micro-films. However, if one considers the accuracy of the method with respect *only* to minimal

cases, which after all are the ones of predominant interest and importance, both readers missed two out of seven minimal cases which were disclosed on the 14x17 film, or 28.4 per cent.

Having no generally acceptable figures for the accuracy of either of the two photofluorographic methods, let us consider the more favorable figures published and assume that the accuracy of the 4x5 miniature photo is 98.5 per cent of that of the 14x17 roentgenograph, either cellulose or roll paper film, and that the 35mm microphoto is 95 per cent as efficient in respect to disclosing minimal cases of pulmonary tuberculosis when compared with full size radiographs on either paper or cellulose films. Stated another way, this means that out of a hundred minimal cases of tuberculosis which would be revealed on the 14x17 radiographs, the 4x5 miniature photos would miss at least one and one-half cases and the 35mm microphotos at least five cases.

Now let us look at such a result from the taxpayer's hard-boiled viewpoint. In large case-finding surveys in New York City, by the use of the roll paper film method, approximately 75 per cent of the cases discovered have been in the minimal stage. Surveys elsewhere have shown at least 50 per cent of all cases discovered to be classified in the minimal stage. To be conservative, let us assume the lower figure.

In New York State, including New York City, the X-ray examination of recruits has been made at Induction Centers after the recruits have been passed by the physicians of the local Registration Board. Presumably, all cases of tuberculosis having clinical symptoms had already been excluded by the Local Board doctors and did not appear before the Induction Boards.

The result of X-ray examination by the Induction Boards was the rejection of approximately 1 per cent of all selectees examined, or about one in a hundred, for tuberculosis on the basis of the X-ray. No classifications into stages are available but let us assume, as stated above, that at least 50 per cent of the cases were in the minimal stage. This means that out of every ten thousand selectees examined by the Induction Boards about one hundred were rejected for pulmonary tuberculosis on the basis of X-ray findings and that at least fifty of these cases were minimals.

If these examinations had been made with 4x5 miniature photos instead of with 14x17 roentgenograms, as they were, 1½ per cent or more of them would have been missed; had they been made with 35 mm microphotos, 5 per cent or more would have been missed. Past experience teaches that each such case which gets into the Service may ultimately entail an average expense of $10,000 in money.

How much money is it "good business" for the Government to spend for X-ray examinations *now* in order to keep one such case out of the Service? Is it worth spending a dollar to save a dollar? Spending the dollar for X-ray now will not only save many dollars in future compensation, pensions, medical care, sanatoria operation, support of dependents, etc., but it may also save the life of the rejected man and at the same time prevent his disseminating his disease among his comrades in the Service.

What would be the difference in cost between the most expensive and the least expensive mass X-ray method for X-raying 10,000 men? With paper film costing twenty-five cents per X-ray and the 35mm film costing one cent, there is a difference of twenty-four cents per X-ray, or $2,400 on 10,000 X-rays.

If the use of the more expensive film resulted in the finding and rejecting from the Service of only one case out of these 10,000 men, it would save the Government $7,600. The finding of two cases would save $17,600. What is the economical course to pursue under these conditions?

If it is probable that out of 10,000 X-ray examinations only *one* more case may be discovered by the use of a more efficient method, where that case would, or even *might* be missed by another less efficient method, what is it worth to the Government to use the better method? And what is the plain moral obligation of the Government toward those who are admitted to the Service in spite of an existing tuberculosis condition which the less efficient method failed to reveal?

Home for Consumptives, Chestnut Hill.

XUM

THE FUNGICIDAL EFFECT OF SULFUR COMPOUNDS TESTED BY A NEW METHOD*

FRITZ J. VON GUTFELD, M.D.,
and
FREDERICK W. SHAW, M.D.,
Richmond, Virginia.

Various sulfur preparations are in use as fungicides for the treatment of fungous diseases in plants as well as in man. According to McCallan and Wilcoxon[1] hydrogen sulfide must be considered as the actual fungicidal agent. These authors, however, found that the difference in toxicities of many commercial sulfur fungicides was neither correlated with the sulfur content, nor with the rate of formation of H_2S in the presence of fungus spores.[2] From their elaborate experiments they draw the conclusion that the most important single factor determining the toxicity of sulfur dust is the number of particles furnished per unit weight of the material. That means the smaller the size of the sulfur particles, the higher the toxicity.

McCallan and Wilcoxon experimented on fungi which produce diseases in plants. It seemed worthwhile to study the effect of different sulfur compounds on fungi causing diseases in man. According to the aforementioned results, a comparison of colloidal and non-colloidal sulfur preparations was made. As a representative of fungi causing diseases in man a strain of Trichophyton gypseum was chosen.

The colloidal sulfur compound used for these experiments is a commercial product called Bensulfoid† (colloidal bentonite-sulfur), described by A. S. McDaniel.[3] The fungicidal experiments mentioned in this publication refer to fungi pathogenic for plants. The clinical use of colloidal sulfur has been reported by various authors (see H. E. Miller[4]). For our experiments we wanted to apply a method which approaches natural conditions as closely as possible. Since many of the fungi which cause disease in man produce a mycelium, which cannot be distributed into a homogeneous suspension, the usual methods applied in testing bactericidal agents were not suitable. This refers even to the otherwise excellent methods published by the U. S. Food and Drug Administration.[5] The application of methods elaborated for the testing of disinfectants and antiseptics against bacteria to experiments with fungi limits considerably the value of results such as obtained by Paulina Gomez-Vega[6] and Adelia McCrea.[7,8,9] We fully agree with Burlingame and Reddish[10] concerning their objections to the method used by McCrea. The method adopted by her can by no means be considered as a "standard method for the evaluation of fungicides".

The most satisfactory method so far described seems to be the one by Burlingame and Reddish.[10] However, since a five days old culture of the fungus to be tested, which has grown *on the surface* of a Sabouraud agar plate, is used in this method, the power to penetrate cannot be proved readily.

We, therefore, developed a new method.

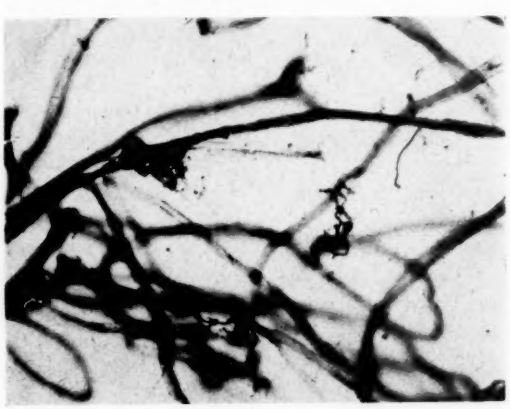


Fig. 1.—Photomicrograph showing cotton fibres with Trichophyton gypseum growing on and between the fibres. Since the fungus grows partly inside the string, a fungicide can be effective only, if it is able to penetrate the string substance.

An Erlenmeyer flask (500 cc. size) containing 100 cc. of a liquid medium (1 per cent peptone water proved to be satisfactory) and thirty to forty pieces of ordinary cotton or wool string (1½-2 cm long, ca. ¾ mm thick) is autoclaved (20 min. 121°C). After the medium has cooled, it is inoculated with Trichophyton gypseum and kept at room temperature. The fungus grows in the peptone

*From the Department of Bacteriology and Parasitology, Medical College of Virginia, Richmond.

†The Bensulfoid use in these experiments was obtained through the courtesy of Wm. P. Poythress & Co., Inc., Richmond, Va.

water, and at the same time infects the strings (Fig. 1 and 2). The infected strings can be used at different times after the inoculation in order to get the fungus in a more or less mature state. The fungicidal test is done as follows: Some infected strings are transferred to the fungicide solution, other strings to the menstruum only, in which no

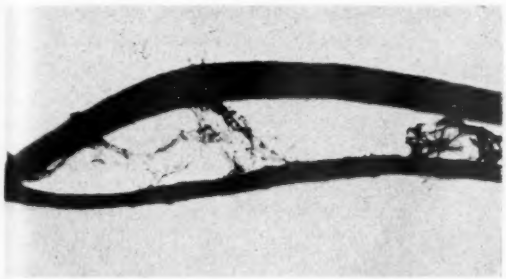


Fig. 2.—Two typical wool fibres showing the growth of Trichophyton gypseum on and between them.

fungicide is dissolved, as a control. After a suitable lapse of time one string is removed from each the germicide and the control, rinsed with sterile water, and placed on the surface of a suitable medium (we used corn meal agar). The results are read after two, four, seven and fourteen days sojourn at

Fig. 3.—Trichophyton gypseum grown in 1 per cent peptone water together with wool (1), linen (2) and artificial silk (3). Tissues transferred on corn meal agar on March 24, 1941. Photo March 28, 1941.

room temperature. Besides cotton or woll strings other "fungus carriers" may be used, if desired; e.g., small pieces of filter paper (Fig 3).

In order to check the viability of the fungus in the strings, we dried several infected strings at room temperature, and transferred them later to corn meal agar. Growth of Trichophyton gypseum could be obtained up to seventy-eight days after the strings had been dried.

We found, however, certain differences of viability and of the reproductive power of the fungi in dried strings. If the time during which the infection of the strings should take place is too short the results are irregular; only some of the strings become infected, others not. If, on the other hand, the fungus culture is kept too long, the fungus dies. Besides we found that the longer the time allowed to elapse after drying, the longer the delay before the fungus starts growing after the dry string has been transferred to the nutrient medium. The most satisfactory results were obtained with strings which had been in contact with the growing fungus from two to five weeks. The viability of our infected strings apparently makes it possible to ship infected strings to different places. This would involve two advantages: (1) The shipment of fungus strains on dried strings would be much easier than the usual method of sending medium-containing test tubes, and (2) similar experiments could be carried out at different places with exactly the same fungus material.

EXPERIMENT MARCH 10, 1941. Cotton strings in 1 per cent peptone water infected with Trichophyton gypseum. As fungicides were used:

(1) Bensulfoid (sulfur content 33⅓ per cent by weight, bentonite 66 ⅔ per cent) 20 gr. in 1 fl. oz. of water.

(2) Precipitated sulfur (1 part) mixed with 2 parts of bentonite, 20 gr. of the mixture in 1 fl. oz. of water.

(3) Refined sulfur ("300 mesh") 1 part mixed with 2 parts of bentonite. 20 gr. of the mixture in 1 fl. oz. of water.

Controls:

(4) Bentonite 13 gr. in 1 fl. oz. of water.

(5) Water.

In Table 1 we report the results at the final reading after fourteen days of incubation at room temperature. Bensulfoid killed the fungus after five hours of contact; precipitated sulfur after twenty-four hours, but refined sulfur was without effect even after forty-eight hours of contact. The controls need no explanation. The growth of contami-

nating organisms does not inhibit the growth of Trichophyton gypseum as can be seen from the first column in this table.

TABLE 1.

FUNGICIDE	TREATED WITH FUNGICIDE FOR 5 HOURS	24 HOURS	48 HOURS
Bensulfoid	C	—	—
Precip. sulfur	+C	—	—
Refined sulfur	+C	+	+
Bentonite (control)	+	+	+
Water (control)	+	+	+

+ = growth of Trichophyton gypseum.
— = sterile after 14 days of incubation.
C = contaminated.

EXPERIMENT MARCH 24, 1941. Cotton strings in 1 per cent peptone water infected with Trichophyton gypseum.

Fungicides:

(1) Bensulfoid 20 gr. in 1 fl. oz. water.
(2) Refined flour sulfur ("300 mesh") 23 gr. mixed with bentonite 13 gr. in 1 fl. oz. water.
(3) Precipitated sulfur 45 gr. mixed with bentonite 13 gr. in 1 fl. oz. water.

Four infected strings were placed in each of the three suspensions. After six hours the strings were removed, rinsed with sterile water and placed on the surface of corn meal agar plates.

Result: Bensulfoid killed the fungus in three strings out of four; the other two sulfur preparations did not kill in any instance, though their sulfur contents were considerably higher.

Several repetitions of these experiments yielded essentially the same results: Bensulfoid seems to be more effective in killing Trichophyton gypseum in these experiments than other (non-colloidal) sulfur compounds. However, we cannot rely on obtaining a 100 per cent fungicidal effect. Further experiments with other kinds of fungi as well as attempts to improve the action of Bensulfoid are in progress, and we hope to have the opportunity to report the results in due time.

SUMMARY

1. A new method for testing fungicides is described. This method offers other advantages also, which are discussed.
2. Bensulfoid, a colloidal sulfur compound, is a more effective fungicide than other (non-colloidal) sulfur preparations when tested against Trichophyton gypseum; however, its fungicidal action is not absolutely certain.

REFERENCES

1. McCallan, S. E. A., and Wilcoxon, Frank: The Fungicidal Action of Sulphur. II. The Production of H_2S by Sulphured Leaves and Spores and its Toxicity to Spores. Contrib. Boyce Thompson Inst. 3:13-38, 1931.
2. Wilcoxon, Frank and McCallan, S. E. A.: The Fungicidal Action of Sulphur. III. Physical Factors Affecting the Efficiency of Dusts. Contrib. Boyce Thompson Inst. 3:513, 1931.
3. McDaniel, A. S.: Colloidal Bentonite-Sulfur. Industrial and Engineering Chemistry. Vol. 26, p. 340, 1934.
4. Miller, H. E.: Colloidal Sulphur in Dermatology. *Archives of Dermatology and Syphilology.* Vol. 31, pp. 516-25, 1935.
5. U. S. Department of Agriculture, Circular 198, 1931.
6. Gomez-Vega, Paulina: Mycostatic Studies on Certain Moniliae and Related Fungi. *Archives of Dermatology and Syphilology.* Vol. 32, pp. 49-58, 1935.
7. McCrea, Adelia: A Proposed Standard Method for the Evaluation of Fungicides. *J. Lab. and Clin. Med.,* Vol. 17:72-74, 1931.
8. McCrea, Adelia: Fungicidal Value of Some Common Dyes Against Dermatophytic Fungi. *Mycologia.* 26:449-453,1934.
9. McCrea, Adelia: Fungicidal Testing: A Comparison of Methods. *J. Lab. and Clin. Med.,* Vol. 25:538-541, 1940.
10. Burlingame, Ella M., and Reddish, George F.: Laboratory Methods for Testing Fungicides Used in the Treatment of Epidermophytosis. *J. Lab. and Clin. Med.,* Vol. 24:765-772, April, 1939.

THE USE OF DEPROTEINATED PANCREAS EXTRACTS

MARSHALL J. PAYNE, M.D., F.A.C.S., F.I.C.S.,
Staunton, Virginia.

In this day, it is an easy temptation to exaggerate the importance, usefulness, and value of the endocrines, hormones, and vitamins. Recent experience, however, proves to my mind the value of the tissue extract, deproteinated pancreatic extract*—a rather recent addition to the constant and rapid advent of new remedies, as being a remedy of outstanding im-

*Depropanex (Sharp and Dohme).

portance and value. I do not hesitate to say that it should be classed among the group of "the sheet anchor remedies", for example, opium.

Deproteinated pancreatic extract has a specific, powerful action on the non-voluntary or non-striped muscle fibers; for example, the ureter, the gall ducts, and blood vessel wall are profoundly, favorably, and benignly affected by this potent remedy.

The following cases are cited to illustrate the helpfulness of the remedy:

CASE I.—S., white, female, married. C. C. Painful, numb, cold right index finger, with parental history of Raynaud's disease. Deproteinated pancreatic extract relieved the condition within a few minutes, and continuance of the treatment for ten days brought about apparent permanent recovery.

CASE II.—P., white, female, single, forty-eight. C. C. Jaundice with pain, prostration; thought by consultant to be malignant; inconclusive X-ray diagnosis; general condition precluded ill-advised experiment or operative surgical measures. Hence, deproteinated pancreatic extract given daily resulted in expulsion of five large gall stones, with complete relief and return of health. It should be emphasized that a previous chronic constipation due probably to a spastic small colon demonstrated at a previous abdominal operation, has also favorably responded to the treatment. Further X-ray study of the gallbladder is contemplated.

CASE III.—M., white, male, widowed, seventy-four. C. C. Recurrent attacks of anginal pains due to coronary disease, not relieved by morphine, pantopon, or dilaudid, as formerly in other repeated attacks. The use of deproteinated pancreas extract brought startling relief of the pain and cessation of the almost hourly recurrence of pain.

The dosage is about 3-5 c.c. to be given always hypodermically. The repetition may be made safely if indicated at short intervals, however, my experience shows that the interval usually may be extended to at least twelve hours or even longer.

I regard this remedy as of outstanding value. When one will consider the fact that non-striped muscle fibers may be relaxed by a potent product, two thoughts come to the mind. First, in vascular diseases, the ability of the muscle of the vessel to respond to the action of deproteinated pancreas extract indicates that the vessel is not so sclerosed or hardened, or yet so thrombosed as to preclude the possibility of relaxing the vessel, and this specific effect is therefore of valuable diagnostic and prognostic value. It is at once admitted that the blood vessel condition may be so extensive and so grossly pathologic, that neither deproteinated pancreas extract nor any other remedy or means will effect relaxation of the vessel. Therefore, failure of relief of pain and other manifestations, by this remedy, obviously argue for the presence of gross changes and irremedial vascular diseases. Such conditions frequently face the astute clinician.

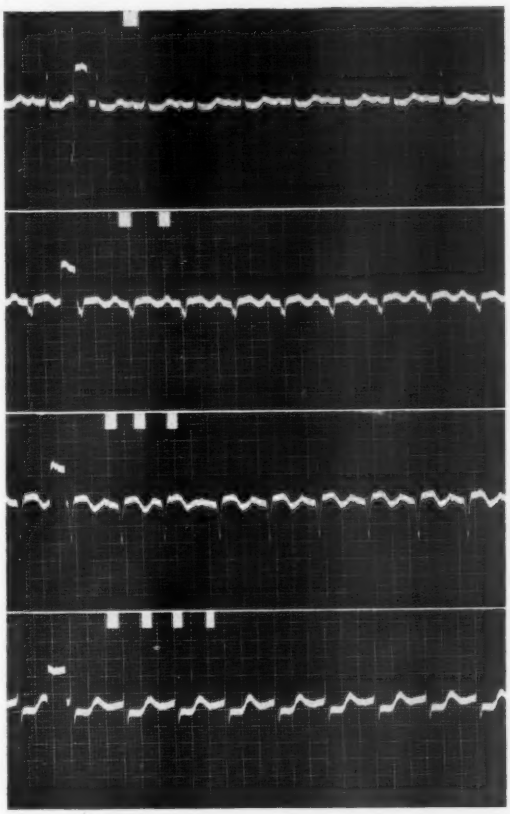


Fig. 1.—Electrocardiographic record in case of Mr. M. taken before the use of deproteinated pancreatic extract.

The pain attending coronary disease is due to a localized ischemia, therefore, a local anoxemia occurs which results in a lowered or loss of nutrition of the affected part. It seems more logical in the treatment of this condition to use a remedy which relaxes the blood vessels of the affected area, thereby relieving the pain, than to use a drug, which, by its specific action (as for example morphine), relieves the pain, but does not distinctly or beneficially af-

fect the local or collateral circulation. The effect of morphine and other similar drugs gives temporary relief to the pain, but these in no way actually appear to be curative.

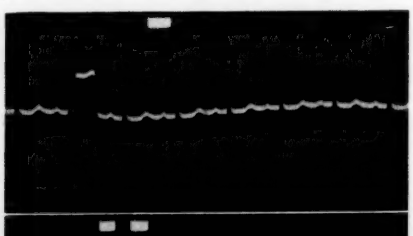


Fig. 2.—Electrocardiographic record in case of Mr. M. taken after use of deproteinated pancreatic extract.

We must not conclude that the relaxing effect of deproteinated pancreas extract is confined to the diseased vessel alone, for its effect extends to even healthy vessel walls. This effect is most benign in vascular diseases, inasmuch as this specific action will of necessity improve any collateral circulation, and thereby act to enhance the nutrition of the involved muscular structures, which in turn should add to longevity. It is wise, therefore, to continue the treatment of coronary disease by the use of deproteinated pancreas extract for a number of weeks. No ill effects from the use of deproteinated pancreas extract in large doses may be feared by extended administration. It is in no sense habit producing.

The following is a technical outline of Depropanex Deproteinated Pancreatic Extract, as described by Dr. John Henderson:

"Deproteinated pancreatic extract is a saline solution of a chemically purified protein-free nitrogenous fraction, derived from an acid-alcohol extraction of beef pancreas. Physiological tests show it to be free from insulin, histamine and acetylcholine. It contains approximately 2.5 per cent of solids, including 0.5 per cent of non-protein nitrogen, 0.9 per cent of sodium chloride and 0.25 per cent of phenol, as preservative. It is adjusted to pH 6.5.

"It is assayed by comparing its effect upon the arterial blood pressure of anesthetized dogs with that of a standard preparation. The standard preparation was adopted after it was shown that 1 cc. produced, in a large series of dogs, an average lowering in arterial blood pressure equivalent to the rise in arterial blood pressure produced by 0.01 mg. of epinephrine, in the same dogs. The standard is preserved by the lyophile process and stored in the dried state at 5°C.

"Each lot of deproteinated pancreatic extract is tested for significant quantities of acetylcholine by comparing its effect upon the arterial blood pressure in dogs, both before and after atropinization. It is also tested for significant quantities of histamine by observing its effect in the lowering of the arterial blood pressure of urethanized rabbits. The physiological effect of each lot is also quantitatively observed by means of the heart-blocking effect in mice."

ACUTE INTUSSUSCEPTION*

EDWIN L. KENDIG, JR., M.D.,
Richmond, Virginia.

Intussusception may be defined as the infolding of a segment of the bowel into an adjacent portion. It constitutes one of the commonest and most dangerous forms of obstruction, and one in which successful treatment depends upon early diagnosis[1]. The vast majority of cases occurs in children.

This condition is not rare and much has been written on the subject, but practically all of the large series of cases have been reported in foreign

From the Department of Pediatrics, Medical College of Virginia.

*Read before the Fourth District and Southside Virginia Medical Society, Blackstone, Va., May 20, 1941.

literature. In the United States relatively few cases have been reported.

During the past ten years, there were twenty-one children admitted to the Hospital Division of the Medical College of Virginia in whom a diagnosis of intussusception was made. Of particular interest are three cases with history suggesting a previous attack. These will be discussed more fully later in this paper.

There are several generally accepted facts in regard to the incidence of intussusception. One of these is that the male sex is involved at least twice as often as is the female[2]. Another is that the largest number of cases is seen in children under two years of age, and that at least one-half of these are infants between five and nine months of age[3].

Our study is too small to be of much value in reference to these observations. Suffice it to say that, of the twenty-one cases in our series, fourteen children were under one year of age, and eleven of these were between the ages of four and nine months. The number of females involved was approximately the same as the number of males.

The causative factor in intussusception is unknown in most instances. A few cases are caused by a definite tumor at the site of infolding and a rare one by the inversion into the bowel of a Meckel's diverticulum or appendix[4]. The most likely theory for the causation of the large majority of cases is that advanced by Perrin and Lindsay.[5] In brief, these authors feel that the anatomical features of the bowel of small children, particularly in the region of the ileocecal valve, are such that any slight gastro-intestinal upset may precipitate an intussusception.

The probable cause was demonstrable in only two of our cases. In one of these there was a tumor at the site of infolding (colic), and in another there was a Meckel's diverticulum which was presumed to be the causative factor.

The four types of intussusception may be classified according to the point of origin of the lesion[4]. The most frequent of these is the ileocecal, in which the ileocecal valve constitutes the apex of the intussusception. This type comprises about 50 per cent of the cases. In the ileocolic group, the infolding begins at some point in the ileum, and this type is found in about 30 per cent. The enteric type, as its name implies, involves only the small intestine, and the colic, likewise, involves only the large bowel. Each of these latter groups comprises about 10 per cent of the cases.

Of the eighteen cases in this series in which the pathology was demonstrable, eight were ileocolic and there were also eight of the ileocecal group. Colic intussusception was present in the other two instances (See Table I).

TABLE I

TYPE	CASES	AT SURGERY	AT AUTOPSY
Ileocolic	8	7	1
Ileocecal	8	8	0
Colic	2	2	0

The typical clinical picture is characteristic and has been described by many writers on this subject. The onset is usually sudden and acute. The baby, apparently in perfect health, suddenly begins to cry violently with an attack of abdominal pain. He draws up his knees. His facial expression is one of anxiety. One observer[6] has recently noted that some of these children, who had previously been difficult to treat, seemed eager and anxious to be examined. Between attacks of pain the child is usually quite comfortable, but the pain returns at intervals and causes the same reaction. The body temperature at this time is normal or subnormal. Shortly afterward, vomiting, almost projectile in nature, begins. The bowels may move normally for some time, but after a while the stools contain blood and later consist of only blood and mucus. As time passes, the expression of anxiety is replaced by one of apathy and the child cries only with an attack of pain. He seems completely disinterested in his surroundings. If the condition is not relieved, dehydration and toxemia follow.

It will be seen that the three main symptoms in this condition are vomiting, passage of blood in the stools, and abdominal pain. In our group of cases, vomiting was the most frequent symptom, occurring in all but one instance. In seventeen patients there was passage of blood per rectum. Abdominal pain was the only other symptom noted in more than half the cases (See Table II). The frequency of diarrhea and constipation was not easy to evaluate, since these conditions existed alternately in many cases.

TABLE II

SYMPTOM	CASES
Vomiting	20
Blood per rectum	17
Abdominal pain	12
Diarrhea	6
Constipation	3

XUM

The child is usually fairly well hydrated and nourished, if seen soon after the onset. Abdominal examination during this period often reveals a firm, sausage-shaped mass, which is freely movable. With attacks of pain, this mass becomes harder. Later, abdominal distention or rigidity may prevent palpation of the tumor. In this particular series, an abdominal mass was palpable in slightly less than one-half the cases. Rectal examination is extremely important. Occasionally, a mass can be seen protruding from the anal orifice, but more often the mass can be felt by the examining finger one inch or more above. In many cases, no mass is palpable, but withdrawal of the examining finger will bring forth blood or blood-stained mucus. In this series, a mass was felt on rectal examination in approximately one-half the patients, and in four of these there was also blood. In four other cases, no mass was felt, but either blood or blood stained mucus was seen at the anal orifice following withdrawal of the examining finger (See Table III).

TABLE III

SIGNS	CASES
Abdominal mass	10
Abdominal distention	10
Mass on rectal examination	10
Blood, mucus per rectum	8
Abdominal tenderness	5

As noted elsewhere in this paper, there seemed to be more than the usual tendency toward recurrence in our series, since three of the twenty-one cases gave a history suggestive of a previous attack. In 1934, Ladd and Gross[7] assembled from the literature ninety-three cases of proven recurrence. Since that time, other cases[8] have been reported.

Two of our three cases, however, recovered from this supposed initial attack without benefit of surgery, only to come to operation at a later date. These were "probable recurrences" which must remain unproven. The other case presents no such question.

CASE REPORT

H. S., a two-year-old white female, was admitted to the hospital with a history of illness of fifty-four hours duration. Onset was typical, with cramping abdominal pain, intermittent in character. Repeated spells of vomiting followed. The child was given medication consisting of first Ex-lax, then castor oil, and later rhubarb. There was at least one stool during each day of the illness. The mother stated that the child had had an abdominal operation at another hospital eleven months prior to this admission.

Physical examination on admission revealed a crying, restless child, obviously in pain. She was moderately dehydrated. Abdominal examination at this time revealed nothing definite, and there were no other pathologic findings. Twenty-four hours later, however, there was some generalized abdominal tenderness, and a mass was thought to be palable in the right upper quadrant. At operation, intussusception at the ileocecal valve was found. Reduction was easy and the child made an uneventful recovery.

A checkup on the record at the hospital at which the first operation was performed revealed that an intussusception had been successful reduced.

This case of recurrence is of particular interest, because, in spite of the fact that the child had previously had an intussusception with a typical clinical picture, with proven diagnosis at operation, a second attack was allowed to continue for fifty-four hours before hospitalization was ordered. It is true that even then the picture was not sufficiently clear-cut to warrant surgical interference and it was not until twenty-four hours after admission that operation was performed. However, the case does seem to have warranted earlier hospitalization for more careful observation.

Earlier diagnosis and prompt surgery is the key to a more successful treatment of this condition. In this series, seven out of ten patients admitted with a history of illness of less than forty-eight hours' duration recovered. Of those eight children admitted with a history of illness longer than three days only three lived. In larger groups of cases the difference is even more striking.

In our series, administration of laxatives and cathartics seemed to have little effect on the outcome. At least one of these was given in seven of the cases, and of these, four patients recovered and three died. It is interesting to note, moreover, that all of these three deaths occurred in patients given only mild laxatives (See Table IV).

TABLE IV

ADMINISTRATION OF CATHARTICS AND LAXATIVES

	CASES	RECOVERED	DIED
Castor Oil	2	2	0
Castor Oil and Ex-lax	1	1	0
Calomel	1	1	0
Cascara	1	0	1
Milk of Magnesia	2	0	2

The nine deaths in twenty-one cases constitute about the usual mortality. Montgomery[4] writes that the mortality in this condition is usually about 50 per cent, but adds that better results have been reported from some children's hospitals where the

physicians are constantly on the alert for this condition, and thereby tend to make earlier diagnosis and operation.

Conservative treatment seems to be in favor in England, Australia, and Denmark, and it is from these countries that most of the cases of cure by conservative means have been reported. Hipsley[9], for example, has recorded eighteen cases successfully reduced by means of hydrostatic pressure, in which the diagnosis was later verified by operation.

It is, however, almost impossible to determine whether or not reduction by conservative methods has been completely successful, and in this country it is felt that prompt surgical intervention is the only safe method of therapy. The surgical treatment consists of gentle milking out of the intussuscipiens (infolded part of the gut). When the intussusception cannot be successfully unfolded, the usual result is a fatality.

SUMMARY

Intussusception is a common and dangerous cause of acute intestinal obstruction in children. The usual clinical picture consists of vomiting, abdominal pain, and passage of blood by bowel. Physical examination, which may reveal an abdominal mass, should always include a careful rectal examination Effective treatment of intussusception is dependent upon early recognition and prompt surgery. Recurrence of this condition is not unusual. Twenty-one cases of intussusception are reported.

REFERENCES

1. Homans, John: A Textbook of Surgery, 1932.
2. Wakeley, C. P. G., and Atkinson, F. R. B.: *British Journal of Children's Diseases,* 35:241, 1938.
3. Miller, E. M.: *Annals of Surgery,* 98:706, 1933.
4. Montgomery, A. H.: Brenneman's Practice of Pediatrics, 1939.
5. Perrin, W. S., and Lindsay, S. C.: *British Journal of Surgery,* 9:46, 1921.
6. Gordon, E. W.: *Archives of Pediatrics,* 57:585, 1940.
7. Ladd, W. E., and Gross, R. E.: *Archives of Surgery,* 29:365, 1934.
8. Miller, M. M., and Beatty, C. L.: *Ohio State Medical Journal,* 31:759, 1935.
Gissane, W.: *British Journal of Surgery,* 25:608, 1938.
Coldrey, E.: *British Medical Journal,* 1:110, 1939.
Fraser, I.: *Lancet,* 1:874, 1939.
Salmon, M., and Dor, J.: *Marseille Mêd.,* 1:634, 1936.
9. Hipsley, P. L.: *Medical Journal of Australia,* 2:201, 1926.

1214 West Franklin Street.

THE PLACE OF IODINE IN THE TREATMENT OF GOITER

An Analysis of 750 Cases*

LESLIE M. BELL, M.D.,
Winchester, Virginia.

It is difficult today to understand the reasoning which twenty years ago proved that iodine was positively dangerous in hyperthyroidism, and was to be avoided at all costs. Tincture of iodine was used to prepare the operative field for all general surgery except that of the thyroid. In thyroid cases the neck was painted with picric acid, alcohol or some other antiseptic, so that no iodine could possibly come near the patient. Then there was the revolutionary work of Plummer[12] in 1923 at the Mayo Clinic which proved that iodine was of inestimable value in preparing cases of hyperthyroidism for surgery. Universal adoption of this precedure indicates its worth.

As was natural, with the advent of the use of Lugol's solution for the preparation of patients with hyperthyroidism for operation, and with the development of goiter prophylaxis by the use of iodine, the drug was widely used by physicians and by the laity in all enlargements of the thyroid, with the hope that iodine would act upon it in a favorable manner. It was necessary twenty years ago to prove that Lugol's solution alone did not cure hyperthyroidism. There was the long persistence of many physicians in carrying iodine treatment of hyperthyroidism on for weeks, months and even years in their attempt to save the patient from surgery. This was in part due to their desire to see whether iodine alone could

*The cases reported in this paper are from Dr. Howard M. Clute's office, Boston, Mass., and from the Surgical Service of the Massachusetts Memorial Hospitals. The cases were studied and reviewed while the author was a member of Dr. Clute's office and on the Staff of the Department of Surgery of Boston University Medical School and the Massachusetts Memorial Hospitals.

Read before the Northern Virginia Medical Society, April 8, 1941.

cure hyperthyroidism, and also to the fact that the mortality of the surgical treatment was in many places very high. With increasing experience in the management of thyroid disease it became apparent that iodine was not a "cure all" for every type of goiter and that there were definite and distinct limitations in its use. It was shown that great benefits consistently followed the proper administration of iodine in selected cases of thyroid disease and that its administration was futile in other types of goiter.

INCIDENCE OF USE OF IODINE IN 750 CASES OF GOITER, REAL AND SUSPECTED

Clute and Pilcher[2] reviewed some goiter cases seen in 1931 and 1932 and they found that iodine was still being given indiscriminately to all types of thyroid disease. In 1940 we were interested to learn the present practice among doctors in regard to the iodine treatment of goiter and to consider what effect, if any, this has on the ultimate course of the disease and its surgical treatment. Therefore, the last 750 patients referred to Dr. Clute's office and to his surgical service as goiter problems were reviewed from the viewpoint of their iodine treatment before we saw them, and its relation to the management of their disease after we saw them. We have endeavored, from this study, to establish and to estimate our present opinion regarding the clinical use of iodine in goiter, and to report the present tendencies of the profession toward this problem.

In this group 283 patients (Table 1) were found to have exophthalmic goiter. These patients having exophthalmic goiter were just about evenly divided in regard to previous iodine therapy. Forty-seven per cent had had iodine for weeks, months or years before coming to surgery and 53 per cent had had none. In the exophthalmic goiter patients who had had no previous iodine treatment 87 per cent were operated upon with a one stage subtotal thyroidectomy. Thirteen per cent only required two stage procedures. Only 5 per cent of the entire group had any post-operative reaction of note.

In the exophthalmic goiter cases who had had long iodine feedings before coming to us there was a marked contrast in the operability. Only 60 per cent could be done in one stage and 40 per cent required a two stage thyroidectomy (Table 1). Furthermore, 24 per cent of this group who had iodine for a long time had notable and occasionally serious post-operative reactions.

The mortality of these two groups was the same, there being two fatal cases in the non-iodine group and two in the iodine fed cases. In the patients who had had no iodine before coming to us, one died of post-operative hemorrhage. The other fatality was from a post-operative storm. As we look back on this second case we now realize that she had not had sufficiently long pre-operative treatment in the hospital. We underestimated the severity of her hyperthyroidism.

TABLE 1—EXOPHTHALMIC GOITER PATIENTS, SHOWING RELATION OF PREVIOUS IODINE THERAPY TO OPERABILITY

TOTAL NUMBER OF CASES			NUMBER OPERATED	ONE STAGE OPERATION	TWO STAGE OPERATION	REACTIONS	DEATHS
283	134 (47%)	Prolonged use of iodine before surgery	124	75 (60.5%)	49 (39.5%)	30 (24.2%)	2
	149 (53%)	No iodine before preparation for surgery	139	121 (87%)	18 (13%)	7 (5%)	2

4 deaths in { 263 cases = 1.5% mortality. 330 operations = 1.2% mortality.

In the patients who had had iodine before coming to us the deaths are very similar to the first group. The first patient, a fibrillating thyrocardiac, died as his anesthesia was being started. The second patient was a case, the severity and long duration of which we failed to properly estimate. She died in a post-operative storm. As we look back at her, and recall her inability to speak English and our difficulties in gaining her cooperation, we realize how important these details are in managing a patient with hyperthyroidism. Although we kept her in bed and gave her all the preparatory measures for over two weeks before operation, it was not long enough.

For a long time thyroid surgeons have had the clinical impression that thyroidectomy, carried out in cases of exophthalmic goiter who were at the height of their first remission from iodine, was safest and could usually be done in one stage. Our figures

seem to confirm this. In the group of cases who had not had any iodine before they had their pre-operative preparation, it was possible to perform 27 per cent more one stage thyroidectomies than in the group who had been given iodine for a long time before coming to surgery. This is a matter of considerable importance to the patient, the economic aspect being no small factor. This increased severity of the disease in patients who have had iodine for some time before being prepared for surgery may be due, as Means[10] has suggested, simply to the fact that their disease and its toxicity have been present longer. We believe, however, though we cannot prove it, that there is more to it than this. It is a definite and distinct clinical impression that the improvement almost all exophthalmic goiter cases have the first time they take Lugol's solution is greater than any of the remissions seen after interrupted and intermittent administrations of Lugol's solution. And we believe that surgery in this first remission is safer for the patient, allows him to have a smoother post-operative course, and is easier for the surgeon.

In the toxic adenomatous goiter group there were seventy-six cases (Table 2). Of these, 63 per cent had no iodine previous to their hospital admission, and 92 per cent were operated upon in one stage. Thirty-seven per cent had had previous iodine treatment, and only 62 per cent of these were done in one stage. There were four deaths in the group who had had no iodine and no deaths in the cases who had had iodine. The fatalities were as follows: (1) from a post-operative storm in a patient not treated long enough (seven days) before operation; (2) a thyrocardiac, who had twenty-one days of pre-operative preparation, from a cerebral accident; (3) a thyrocardiac with twenty-five days of pre-operative preparation died of heart failure three days post-operatively; (4) a thyrocardiac, prepared for twenty-one days, died on the operating table. It is difficult for us to relate any of these deaths, except the first one, to the use or abuse of Lugol's solution. It is to be remembered that toxic adenomatous goiter cases are most often seen in middle-age or elderly patients and that many of them have cardiac complications due to their toxicity This is in contrast to the aver-

TABLE 2—TOXIC ADENOMATOUS GOITERS: RELATION OF LONG IODINE TREATMENT TO OPERABILITY

TOTAL NUMBER CASES			NUMBER OPERATED	ONE STAGE OPERATION	TWO STAGE OPERATION	POST-OP. REACTIONS	DEATHS
76	28 (37%)	Prolonged use of iodine before surgery	24	15 (62.5%)	9 (37.5%)	4 (16.6%)	0
	48 (63%)	No iodine before preparation for surgery	48	44 (91.7%)	4 (8.3%)	4 (8.3%)	4

4 deaths in { 72 cases = 5.5% mortality. 85 operations = 4.7% mortality.

TABLE 3—THE NUMBER OF PATIENTS WITH OTHER TYPES OF GOITER AND THE NUMBER WHO HAD PROLONGED TREATMENT WITH IODINE

	NUMBER OF CASES	HAD PREVIOUS IODINE THERAPY	NUMBER HAVING OPERATION
Non-toxic adenomatous goiter	97	26 (26.8%)	76
Non-toxic discrete adenoma	68	10 (14.7%)	63
Simple colloid goiter	44	10 (22.7%)	0
Chronic thyroiditis	9	3 (33.3%)	7
Cancer of thyroid	6	1 (16.6%)	4
Neurocirculatory asthenia (no thyroid disease)	167	39 (23.3%)	0

age exophthalmic goiter case. The toxic adenomatous goiter cases as a whole have a more serious disease because of the above factors, and their operative risk is always higher. Also, some of these cases have only a single, discrete adenoma causing the toxicity and are, therefore, candidates only for a one stage operation. For these reasons, toxic adenomatous goiter patients do not lend themselves to comparison with an equal number of exophthalmic goiter patients. It is, however, obvious to us that a long course of iodine therapy for a no longer young toxic adenomatous goiter patient can only allow them to become older, prolong their disease and its common cardiac disturbances and cause their risk to be greater when they finally come to surgical treatment.

teresting patients with suspected thyroid disease who come to the office of a physician who treats many cases of thyroid disturbances. At times these patients, who are suffering from no disease of the thyroid gland, present diagnostic problems and we are convinced that any thyroid surgery in these neurasthenia cases is definitely contraindicated.

It is apparent from our figures that any patient with real or suspected thyroid disease still stands a strong possibility of receiving a "course" of iodine treatment. However, this probability is not as marked as it has been in the recent past. It would seem desirable to review briefly the benefits which we may hope to derive from iodine therapy in thyroid disease and to point out the dangers which are latent in ill chosen iodine administration.

TABLE 4—SUMMARY OF ALL CASES AND MORTALITY FIGURES

	TOTAL NUMBER OF CASES	CASES HAVING OPERATION	TOTAL NUMBER OF OPERATIONS	DEATHS
Exophthalmic goiter	283	263	330	4
Toxic adenomatous goiter	76	72	85	4
Non-toxic adenomatous goiter	97	76	76	0
Simple colloid goiter	44	0	0	0
Non-toxic discrete adenoma	68	63	63	0
Chronic thyroiditis	9	7	7	0
Cancer of thyroid	6	4	4	0
Neurocirculatory asthenia. (No thyroid disease)	167	0	0	0
Total	750	485	565	8

8 deaths in { 485 cases = 1.6% mortality. 565 operations = 1.4% mortality.

Table 3 outlines the number of cases of other types of goiter which we encountered and whether or not they had had previous iodine treatment.

Twenty-seven per cent of the non-toxic adenomatous goiters had received iodine treatment before coming to us.

Fifteen per cent of the non-toxic discrete adenomas had been treated with iodine.

Twenty-three per cent of the simple colloid goiters had received iodine treatment.

Thirty-three per cent of the thyroiditis cases and 17 per cent of the cancer cases had been treated with iodine.

And finally, 23 per cent of the patients with neurocirculatory asthenia (or whatever one wishes to call it) had been treated with iodine, many for years. There is always a large number of most in-

INDICATIONS FOR IODINE IN DISEASES OF THE THYROID

Iodine is of generally recognized value in preventing the development of simple colloid (endemic) goiter. The work of Marine[8,9] and his associates has sufficiently proved that colloid goiter is a result of absolute or relative lack of iodine—a deficiency disease. Only minute quantities of iodine are needed for the prophylaxis of endemic goiter. This iodine can most readily be given in iodized salt for kitchen and table use. McClure[11] and others have proven both the innocuousness and the efficacy of this method. In areas where the iodine content of the food and water is abnormally low, iodine should be given to children, particularly female children, and to pregnant and lactating women. If one is not an adherent to the use of iodized table salt, there are

tablets of iodine available for the prevention of endemic goiter. Another instance of the prophylactic use of iodine is in pregnant women known to have endemic goiter. It is well known that there is a considerable rise in the basal metabolic rate in women who become pregnant and, therefore, they are in need of an extra amount of iodine. Any woman exhibiting any fullness of the thyroid gland during pregnancy should be given small doses of iodine, and those showing any evidence of hypothyroidism should be given thyroid substance. This will not only prevent marked enlargement of the mother's goiter but will also prevent the occurrence of thyroid enlargements in the baby. Fewer cretins will be born if this procedure is carried out.

The treatment of simple colloid goiter is in no way as easy as its prevention. We believe that small doses of iodine, as in iodized salt, may prevent further hypertrophy and colloid storage in an already enlarged thyroid gland, but we have no proof of this. It is certain that in some cases the enlargement of the thyroid progresses with iodine administration, but it appears equally certain that in many other cases further enlargement of the thyroid is checked. Benefit from iodine administration decreases with the age of the patient and with the age of the goiter Therefore, we favor the administration of small doses of iodine (iodized table salt) to patients with early simple colloid goiter, particularly in adolescent girls. A simple colloid goiter usually is found only in persons under twenty-one years of age, and beyond that age the goiter usually contains adenomata and is then known as a colloid adenomatous goiter. Large doses of iodine should not be given to colloid adenomatous goiters, the danger of which will be discussed later.

The most striking use of iodine is its use in exophthalmic goiter patients in order to bring about a remission of the disease preparatory to surgical treatment, first well established by Plummer[12] in 1923. In this capacity iodine has been of inestimable value. This also applies to the crisis of exophthalmic goiter, either a spontaneous one in patients under no treatment or in the ones occurring post-operatively. The post-operative crises are rare now if the patient has been prepared properly with iodine and all the other supportive measures for ten to twenty days before operation. Long use of iodine in exophthalmic goiter patients before they come to surgery is believed by many to increase their chance of having a post-operative crisis when they finally have surgical treatment. Our figures (Table 1) seem to confirm this clinical impression. We believe the remission that accompanies the first iodine feeding is the best one, and is the optimum place for surgery.

Iodine has proved of great value in the management of certain rare patients who, following thyroidectomy for exophthalmic goiter, have mild residual toxic symptoms. Some of these patients are completely controlled by taking iodine daily, and a few appear to need iodine in relatively large amounts constantly. We cannot explain this, but we are sure it is true. However, it must be stated that the administration of iodine post-operatively does not prevent recurrence of hyperthyroidism in certain cases.

It is our experience that iodine is beneficial in temporarily improving the hyperthyroidism of toxic adenomatous goiters just as it is in exophthalmic goiter. The iodine reduces the metabolism, controls the activation, slows the pulse rate and generally improves these patients We use it routinely in the preparation of these patients for operation.

The last place in which iodine is useful in the management of thyroid disease is in certain cases of borderline hyperthyroidism. It is well recognized that patients with neurocirculatory asthenia (neurasthenia) present a clinical picture not unlike patients with mild hyperthyroidism. In these borderline cases iodine may be tried for a few days as a diagnostic measure. In these cases a frank and definite improvement in symptoms and metabolic readings clinches the diagnosis of hyperthyroidism. Cases that really need this test procedure are, we believe, rare.

After a considerable experience in the treatment of patients with disease of the thyroid gland, we have concluded that only two general indications are present in disorders of this gland for the administration of iodine: first, as a means of prophylaxis against the development of colloid (endemic) goiter and against further enlargement of endemic goiter in adolescent children and in pregnant and lactating women; secondly, in the management of hyperthyroidism, whether it be due to exophthalmic or toxic adenomatous goiter, preparatory to surgical treatment.

XUM

INSTANCES WHERE THE USE OF IODINE MAY NOT BE ADVISABLE

What harm may come from the administration of iodine to patients with goiter except as enumerated above? Means[10] warns against the use of large doses of iodine for simple colloid goiter. There has been much discussion in the literature of the recent past about the possibility of iodine administration causing a non-toxic goiter to become toxic. McClure[11] has reviewed the effects of the use of iodized table salt in Michigan. This State is in the endemic goiter belt where colloid goiters were quite prevalent. After thirteen years of general usage of iodized table salt, there was a notable increase in the number of operations for adenomatous goiters and he believes that the iodized table salt may have activated a group of patients with quiescent adenomas, producing toxic goiter symptoms. It is highly significant that during these thirteen years there was no increase in the number of operations for primary hyperthyroidism (exophthalmic goiter), yet there was an increase in the number of operations for hyperthyroidism due to adenomatous goiters. Means[10] states, "Plummer has gone on record as believing that iodine will activate simple adenomatous goiter, and we have seen a few cases ourselves that strongly suggest this." And again he says in regard to adenomatous goiter, "The use of iodine to reduce the size of the goiter is not only often dangerous through the production of toxicity, but ineffective, as it has been in our hands." Marine[8] and others[4, 5, 7] also believe that iodine administration may precipitate hyperthyroidism in patients with non-toxic adenomatous goiters.

The administration of a drug should not be undertaken unless one has some definite objective in mind. It is the experience of physicians who treat large numbers of patients with diseases of the thyroid that iodine will not reduce the size of an adenomatous goiter to any extent. No doubt most physicians have had the same experience. It is now recognized[10] that carcinoma of the thyroid originates in pre-existing adenomata in 90 per cent of the cases. This is more particularly true of the discrete adenoma of the thyroid, which is usually the "fetal" type of adenoma. Therefore, if nodular (adenomatous) goiters are premalignant lesions in a definite percentage of cases, the time spent in the administration of iodine, which cannot reduce the size of the goiter appreciably, may well be ill-advised in the view of the possibility that malignancy may already be present. The chance of early operation, so necessary for the eradication of malignancy, is lost while iodine is administered. One of our cancer cases had had iodine before he was given the benefit of surgical treatment. If it is recognized that iodine will not make an adenoma of the thyroid disappear, then it is unfair to the patient to spend his time and money with this treatment.

It must be strongly emphasized that iodine does not cure hyperthyroidism. The studies of Marine[8] and many others have shown that iodine continued weeks, months or years does not cure hyperthyroidism. It has been repeatedly demonstrated by carefully controlled studies of the metabolism and by mortality statistics that surgery is a safe, quick, and sure method for the cure of hyperthyroidism. The longer the hyperthyroidism persists, whether it be partially controlled by iodine or not, the more serious the disease, the more dangerous the surgery and the more likelihood of one having to undergo a two stage operation for the cure of his disease. Marine[8] believes, like Plummer, that iodine should be administered to exophthalmic goiter patients only if they are to be operated on within about two weeks. DeCourcy[3] states, "The use of iodine for treatment (of exophthalmic goiter patients) without thyroidectomy in view has the unfortunate effect of making the patient 'iodine fast', so that when operation finally becomes necessary pre-operative iodinization fails to produce the temporary benefit required to reduce surgical risk." E. Goetsch[5] stresses the necessity of multiple stage operations in many patients previously treated with iodine. A. Goetsch[4] believes that prolonged use of iodine in cases of hyperthyroidism strongly predisposes to post-operative crises and to increased mortality. In their fatal cases dying in post-operative crises, practically all of them had had indiscriminate treatment with iodine before they came to surgery. Wetherell and Groat[13] call attention to the economic loss to a patient with hyperthyroidism when he has prolonged treatment with iodine, and this loss is increased further because of the fact that he runs the very definite possibility of having to undergo multiple stage operations before he can return to his work. This factor is of great importance to the average patient.

SUMMARY AND CONCLUSIONS

1. Seven hundred and fifty cases of real and suspected thyroid disease are analyzed from the standpoint of iodine therapy.
2. The prolonged and indiscriminate use of iodine in hyperthyroidism is found to increase the number of two stage thyroidectomies as well as the number of post-operative reactions.
3. The indications for the use of iodine in the various kinds of thyroid disease are discussed.
4. The harmful effects which may arise from iodine administration in certain types of thyroid disease are pointed out.

BIBLIOGRAPHY

1. Clute, H. M.: Effect of Compound Solutions of Iodine and Rest in Surgery of Exophthalmic Goiter. *J.A.M.A.*, 86:105-109, 1926.
2. Clute, H. M., and Pilcher, L. S.: Place of Iodine in Treatment of Goiter. *New England J. Med.*, 210: 117-120, 1934.
3. DeCourcy, J. L.: The Present Status of Iodine in Treatment of Exophthalmic Goiter. *Arch. Surg.*, 32:346-354, 1936.
4. Goetsch, Arthur: The Diagnosis and Treatment of Hyperthyroidism and Associated Conditions. *Am. J. Surg.*, 49:534-596, 1940.
5. Goetsch, Emil: Correct and Incorrect Use of Iodine in the Treatment of Goiter. *Am. J. Surg.*, 26:417-430, 1934.
6. Jackson, A. S., and Ewell, G. H.: The Danger of Prolonged Use of Lugol's Solution. *Am. J. Surg.*, 10:475-481, 1930.
7. Jackson, A. S., and Freeman, H. E.: The Effect of Iodine in Adenomatous Goiter. *J.A.M.A.*, 106: 1261-1263, 1936.
8. Marine, D.: The Use and Abuse of Iodine in the Treatment and Prevention of Goiter. *Ann. Clin. Med.*, 5:942-949, 1927.
9. Marine, D.: Glandular Physiology and Therapy. The Pathogenesis and Prevention of Simple or Endemic Goiter. *J.A.M.A.*, 104, 2334-2341, 1935.
10. Means, J. H., and Richardson, E. P.: The Diagnosis and Treatment of Diseases of The Thyroid. Oxford University Press, 1938.
11. McClure, Roy D.: The Incidence of Operations for Goiter in Southern Michigan. *J.A.M.A.*, 109:782-785, 1937.
12. Plummer, H. S.: Results of Administering Iodine to Patient Having Exophthalmic Goiter. *J.A.M.A.*, 80:1955, 1923.
13. Wetherell, F. S., and Groat, W. A.: The Use of Iodine in Toxic Goiters. *J.A.M.A.*, 108:547-548, 1937.

114 West Boscawen Street.

MULTIPLE MYELOMA

Report of a Case*

JACOB FLAX, M.D.,†
Richmond, Virginia.

A white male, aged sixty-five years, was admitted to Stuart Circle Hospital on March 14, 1941, with the chief complaints of weakness, stomach trouble and nasal hemorrhages of three months' duration. He had had the usual childhood diseases and an attack of typhoid fever at twelve years.

The patient was employed as a city fireman, and in 1903 broke his vertebral column at the level of the first lumbar vertebra and injured his spinal cord, which resulted in a partial paralysis of his body from the waist down. Although he remained a semi-invalid, he returned to his job, being employed in some capacity or another until 1939. In 1935, he broke his right ankle, but he managed to continue working with an ankle brace of his own making. Since the recovery from his accident in 1903 he had no urinary symptoms until April, 1939, when he began to complain of frequency, dribbling, dysuria and a nocturia of 10-15 times. A cystometric reading was done revealing an atonic bladder. However, a definite bladder neck obstruction was found by rectal and cystoscopic examinations, for which reason a transurethral resection was done in September, 1939. This was followed by some temporary relief, but his previous symptoms soon returned and have persisted up to the present time. Previous to his resection the laboratory reported 4,180,000 erythrocytes and 81 per cent hemoglobin, 9,300 leukocytes and 62 per cent neutrophils; the blood urea was 18.8 milligrams per cent; the urine contained a trace of albumin, one to four blood and ten to twenty-five pus cells per high power field. Subsequently, several more cystometric readings were done, and all

*Read before the Clinical Club of Stuart Circle Hospital, Richmond, April 9, 1941.

†Dr. Flax is now connected with the Bayamon District Hospital, in Bayamon, Puerto Rico.

pointed to an atonic or cord bladder. In November, 1939, a neurological examination of the patient was done, and he was found to have a bilateral sciatic nerve paralysis below the knees, present since his accident in 1903. The bladder difficulties were thought to have been due to an accentuation of a pre-existing nerve imbalance resulting from his old injury by bone productive changes over a period of years, now causing some encroachment upon the spinal canal and involving the roots of the cauda equina and possibly the conus medullaris. There were no familial tendencies to any disease whatsoever.

About three months previous to admission, this patient suffered an attack of pleurisy which was successfully treated. Following this infection he began having persistent nausea but no vomiting and a very poor appetite. About this time an occasional headache throughout both temporo-parietal regions became evident, accompanied by attacks of vertigo, both of which were apparently relieved by prolonged nasal hemorrhages. He lost thirty-five pounds and became progressively weaker. On many occasions over the past few years a severe lumbar back pain had incapacitated the patient for several hours at a time, but this pain was relieved by rubbing his back with a liniment and using a heat pad locally.

The patient on admission gave the general appearance of being a poorly developed and poorly nourished, anemic white male with marked atrophy of the muscles of the lower extremities. The right ankle joint was fused in an abnormal shape; a slight hippus was present in the region of the first lumbar vertebra; the terminal phalanx of the left forefinger was absent; and, an old healed fracture of the left clavicle was evident. A decubital ulcer, two and a half centimenters in diameter, was present over the tip of the sacrum. The pulse rhythm was regular, and the rate was 78 per minute; the temperature was 99 F; the respiratory rate was 20 per minute; the blood pressure was 160 millimeters of mercury systolic and 94 millimeters of mercury diastolic. Both nares contained blood clots, and there was present on the tongue a black coating, which would not rub off. The radial and retinal arteries were markedly arteriosclerotic. There was a definite distention in the hypogastric region of the abdomen. Dullness to percussion was found in the right upper quadrant over the liver which was palpated at least four centimeters below the right costal border on deep inspiration. The liver edge was smooth and non-tender. The lower extremities could be moved voluntarily without much difficulty; the muscles were markedly atrophied; the sensation to pain, temperature and position in the lower extremities was doubtful, and the deep reflexes were lost.

IMPRESSION: (1) Carcinoma of the liver; (2) Partial paralysis of the lower extremities and bladder; (3) Arteriosclerotic cardio-vascular disease; (4) Decubital ulcer.

The laboratory reported 10,800 white blood cells with 65 per cent neutrophils, 11 per cent endothelial leukocytes, 20 per cent lymphocytes, and 4 per cent eosinophils; 1,570,000 red blood cells with 33.5 per cent hemoglobin; reticulocytes, 2 per cent; and 158,000 blood platelets. The urine following catheterization measured only 180 cubic centimeters, straw colored and cloudy in appearance, acid, specific gravity of 1.010, heavy albumin, 4 plus blood and 3 to 5 pus cells were present per high power field. A roentgenogram of the genito-urinary tract did not reveal any stones, and a cystoscopic examination was not done. The serum protein on March 14, 1941, was above 10.5 grams by the Kagan method. This was repeated the next day and again found to be above 10.5 grams by the Kagan method and verified as 12.2 grams by chemical analysis. Stool examination was positive for blood. The phenolsulphonphthalein test for kidney function revealed only 10 per cent of the dye excreted after two hours in 208 cubic centimeters of urine. On March 18, 1941, the urine contained 4 plus blood and 3 plus pus cells per high power field, a heavy albumin and the presence of Bence-Jones protein in small amounts. Bence-Jones protein was again found in the urine on the following day and in all succeeding specimens while in the hospital. On March 15, 1941, 1 per cent plasma cells were found in the blood smear, 2 per cent on March 17, and 3 per cent on March 18. A diagnosis of multiple myeloma was now considered and confirmed by a roentgenogram of the skull on March 19, 1941, which showed the multiple punched out areas that are more or less typical of this disease. No definite evidence of multiple myeloma could be demonstrated in the thoracic cage or vertebral column by roentgenogram.

Treatment was purely symptomatic. Two transfusions of 500 cubic centimeters of whole citrated blood were given on March 18 and March 24, 1941, raising the hemoglobin to 54 per cent. The tem-

perature and pulse varied from day to day in an irregular fashion with occasional peaks of fever as high as 102 F and 102.5 F. During hospitalization the patient complained only of some mild bilateral temporo-parietal headaches; he had no recurrences of his epistaxis; and, his urinary symptoms cleared up remarkably well after the insertion of an indwelling catheter. Although this condition is a fatal one, the patient left the hospital on March 27, 1941, much improved and in a fair general state of health.

COMMENT

Multiple myeloma is a malignant tumor of the bone marrow arising from a single cell type, the plasma cell, for which reason it is also called "plasma cell myeloma" or "plasmocytoma". Clinically, these tumors are very easily distinguished from other malignant tumors of the bone. They occur in people past forty years of age and are characterized by a multiplicity of lesions. However, Haden and Rumsey[1] point out the misnomer of the term, "multiple myeloma", since this disease may manifest itself as single or multiple tumors, as a generalized hyperplasia of the marrow alone, or as a generalized hyperplasia with discrete tumor formation. Accordingly, they prefer the term, "myelomatosis" rather than "multiple myeloma" since it includes all various types of cases.

Symptoms do not occur early in this disease, since no pain is caused by hyperplasia of the marrow *per se*. Pain, however, once developed is the most outstanding symptom and is produced from erosion of the periosteum and pressure on the adjacent nerves. With decalcification and softening of the bony framework by the hyperplasia of the plasma cells, spontaneous fractures, especially of the ribs, occur, and the vertebrae are usually compressed causing the characteristic neuritic back pains. No tumors were demonstrated in the ribs or vertebrae, so apparently there was no encroachment on the periosteum in these bones and hence no pain.

The second most frequent symptom is weakness, which is in part due to the toxemia present in all malignant diseases, but also resulting mainly from the anemia, which is invariably present when this condition is well developed. This patient had a hemoglobin of 33.5 per cent on admission and was extremely weak. No evidence of multiple myeloma could be demonstrated by roentgenogram in any of the flat bones of the body other than the skull. However, in view of the marked anemia and weakness, a generalized plasma cell hyperplasia of the bone marrow without tumor formation could very easily have been present. A sternal puncture was not done, so this statement cannot be proven. On the other hand, there might have been some other factors producing this anemia which were not known at the time. One important factor may have been the marked kidney involvement present in this case. Late in this disease there is an accumulation of Bence-Jones protein in the tubules, capillaries, and glomeruli as shown by Bell.[2] Casts of the Bence-Jones protein obstruct the tubules and eventually there is marked atrophy of the cortex and renal failure. The low dye excretion (10 per cent in two hours) and the report of a blood urea of 123 milligrams per cent and a creatinine of 6.8 milligrams per cent on April 6, 1941, as compared with a urea of 18.8 milligrams per cent in September, 1939, clearly showed the possibility of marked kidney damage and uremia with death probably not far off. Whether the Bence-Jones protein has so destroyed the kidney parenchyma or whether this is the terminal phase of a chronic hemorrhagic nephritis can only definitely be proven at autopsy.

Occasionally, some plasma cells appear in the blood stream, but this is not the usual finding. On one occasion, March 18, 1941, as high as 3 per cent plasma cells were found in the blood smear. Several subsequent reports showed 1 and 2 per cent plasma cells, but the majority of the smears did not show these cells. These cells which occur so abundantly in the bone marrow are seldom found in the blood stream and so strikingly differentiate this type of bone-marrow cell hyperplasia from the myelocytic leukemias in which there is a preponderance of immature myeloid cells in the blood stream.

A serum protein above 10 grams is rare and is seldom found in any pathologic condition other than multiple myeloma or lymphogranuloma venereum. Because of the high serum protein (12.2 grams) a specimen of urine was examined and found to be positive for Bence-Jones protein. The nature of this substance is not known, nor does it appear always in each urine specimen of patients with this disease. In any case a positive Bence-Jones protein in the blood or urine indicates almost with certainty that there is some involvement of the bone-marrow. A blood smear will usually rule out the leukemias. Careful palpation of the bony structures should next

be done to find any tumors. If these are not found, then roentgenogram examination of the skull, ribs, and the vertebral column will usually reveal the typical lesions of multiple myeloma. The prognosis is poor since most of the individuals die within two years after a diagnosis of multiple myeloma is made.

BIBLIOGRAPHY

1. Haden, H. L., and Rumsey, J. M.: Multiple Myeloma, or Myelomatosis, *Medical Clinics of North America*, 24, 2, 369-380, March, 1940.
2. Bell, E. T.: Renal Lesions Associated with Multiple Myeloma, *Am. J. Path.*, 9, 393-420, July, 1933.

301 Roseneath Road.

Correspondence

An Interesting Case.

TO THE EDITOR:

I have just discharged Mr. B., age eighty years. The diagnosis was measles, developing bronchial pneumonia after a few days; was quite ill for a while, with a high temperature; he is on his porch today in the sunshine and says "I am feeling fine".

I am reporting this on account of the age of Mr. B. So far as I know, this is the oldest case of measles.

R. D. GARCIN, M. D.

Richmond, Va.
September 8, 1941.

Mental Hygiene Activities

Mental Hygiene covers such a large field that all endeavors to correct human behavior fall within its boundaries. The Conference on Industrial Medicine recently held in Richmond was concerned with Mental Hygiene activities. The meeting to discuss the values of planned parenthood, held in the Capital City on September 26th, discussed many topics that would grace the program of any Mental Hygiene Society. In truth in Virginia at present there are several organizations working in the field of human behavior that are only differentiated from the State Mental Hygiene Society because they specialize their activities in some particular field.

The Mental Hygiene Society should coordinate all these activities; it should take advantage of these efforts in its campaign. The special bias of the workers leads to greater interest, which in turn gives more power to these groups. Therefore, all members should support these movements as if they were of their own organization.

The next item of interest for the Mental Hygiene Society is the Annual Meeting. This will be held at the Academy of Medicine in Richmond, on October 29th. At that time new officers will be elected—the president, vice-president, secretary, and treasurer. The position of five to seven members of the Board of Directors will have to be refilled.

At the last meeting of the Board several changes in the Constitution were suggested. These modifications have been considered by the Executive Committee so will come before the general meeting at that time.

The program will call for afternoon and evening speakers. The Program Committee is now arranging the details which will be announced as soon as possible. It is hoped that a program as attractive as the one presented last October can be arranged. Be sure to keep the date—October 29th—in mind. Plan to attend.

Miscellaneous

Hospital Bed Facilities in the United States.

The most widespread survey ever made of hospital bed facilities in the United States, just released by the Census Bureau of the Department of Commerce, reveals that 1,282,785 beds were available in 9,614 institutions for the medical care of the American people in 1939.

The country's 6,991 hospitals and sanatoriums provided the great bulk of this care—355,145,063 patient-days, or the equivalent of one week-end stay in a hospital each year for every person in the United States. Infirmaries and nursing, convalescent, and rest homes provided the remainder.

Hospitals and sanatoriums had 1,186,262 beds—92 per cent of the nation's total. Census Bureau figures show that the average hospital had 169 beds and served 5,000 families.

Hospital facilities for the country, however, were well below the "minimum requirements for adequate medical service" set up in 1933 by the Committee on the Costs of Medical Care. Here's how the number of hospital beds per 10,000 population compares:

	Beds Available	Beds Needed
General	38	46
Tuberculosis	6	14
Mental	46	56
Total	90	116

To meet this minimum of 116 beds per 10,000 population, the United States would have to build 2,000 more average-size, 170-bed hospitals.

Even counting in all the beds available in infirmaries and nursing, convalescent, and rest homes, the Census figures show that twenty-six states had inadequate hospital facilities—fewer than 100 beds per 10,000 population. Eighteen states had between 100 and 124 beds—approximately adequate facilities. Massachusetts, New York, Colorado, Maryland, and the District of Columbia had good facilities—more than 124 beds per 10,000 population.

New York State alone had 192,345 medical-care beds, or more than one-seventh of the nation's total.

Even existing facilities are not being used fully, the Census Bureau Survey indicated. Allowing a margin of reserve for epidemic peaks, the Committee on the Cost of Medical Care estimated that general hospitals would operate most efficiently with an occupancy of 80 per cent, and mental and tuberculosis hospitals with an occupancy of 90 per cent.

In 1939, general hospitals were operating at 70 per cent of capacity, tuberculosis hospitals at 85 per cent, and mental hospitals at 95 per cent. The Census Bureau noted that many mental hospitals are overcrowded, due to rapidly increasing hospitalization for this type of illness.

Although only 594 hospitals—less than one in ten—were for nervous and mental patients, they had 602,850 beds, or more than one-half of the total for all types of patients. They gave 208,466,000 patient-days of care.

The 5,912 general hospitals gave 122,467,000 patient-days of care, and the 485 tuberculosis hospitals 24,212,000 patient-days.

Approximately 77 per cent of the care rendered in 1939 was in state, local and federal government-controlled hospitals, 20 per cent in non-profit institutions, and 3 per cent in proprietary institutions, the Census Bureau noted. The large proportion of care financed by taxes is due to government tuberculosis sanatoriums and government hospitals for mental patients.

MEDICAL-CARE BEDS IN THE UNITED STATES
(Classification based on the "minimum requirements" set up by the Committee on the Costs of Medical Care)

	Total Number of Beds	Beds per 10,000 Population
Good Facilities		
District of Columbia	12,858	194
Massachusetts	66,205	153
New York	192,345	143
Colorado	15,427	137
Maryland	22,836	125
Adequate Facilities		
California	85,365	124
New Hampshire	6,028	123
Vermont	4,387	122
Rhode Island	8,659	121
Washington	20,780	120
Connecticut	20,257	119
Delaware	3,133	118
Wyoming	2,903	116
Minnesota	31,897	114
New Jersey	47,494	114
Oregon	12,238	112
Wisconsin	35,174	112
Montana	6,169	110
Nevada	1,216	110
Illinois	84,871	108
Michigan	55,844	106
Arizona	5,242	105
North Dakota	6,470	101
Inadequate Facilities		
Maine	8,282	98
Pennsylvania	93,756	95
Iowa	23,475	93
South Dakota	5,772	90
Missouri	33,850	89
Kansas	16,070	89
Nebraska	11,506	87
Ohio	59,823	87
Indiana	29,449	86
Virginia	22,929	86
New Mexico	4,363	82
Louisiana	18,357	78
Utah	3,988	73
Oklahoma	16,858	72
Idaho	3,748	71
Florida	13,372	71
Kentucky	18,795	66
Texas	38,821	61
West Virginia	11,477	60
North Carolina	20,711	58
Tennessee	16,514	57
Arkansas	10,946	56
South Carolina	10,670	56
Georgia	17,222	55
Alabama	14,547	51
Mississippi	9,686	44
U. S. Total	1,282,785	97

XUM

Public Health Statistics

I. C. RIGGIN, M.D.,
State Health Commissioner of Virginia

The report of the Bureau of Communicable Diseases of the State Department of Health for August, 1941, compared with the same month in 1940 and for the period of January through August, 1941, compared with the same period in 1940 follows:

	AUG. 1941	AUG. 1940	JAN.-AUG. 1941	JAN.-AUG. 1940
Typhoid and Paratyphoid Fever	37	35	134	130
Diarrhea and Dysentery	1,512	541	3,145	1,167
Measles	262	150	33,727	3,446
Scarlet Fever	53	46	961	1,099
Diphtheria	35	53	261	360
Poliomyelitis	28	27	50	43
Meningitis	14	2	81	55
Undulant Fever	1	2	8	13
Rocky Mountain Spotted Fever	8	19	23	38
Tularemia	2	1	20	29

TUBERCULOSIS IN INDUSTRY

It has been proven by the State Health Department's experience that, as is generally conceded, morbidity rates for tuberculosis are considerably higher among industrial workers than among the general population. The workman's health is a dual responsibility of industry and organized medicine. He can be safeguarded in the plant from exposure to tuberculosis by a careful pre-employment examination that includes an x-ray of the chest, and from unsatisfactory working conditions that might tend to activate old quiescent lesions. Outside the plant, however, it is public health's responsibility to protect the individual from communicable diseases, and to provide the best possible environmental sanitation.

The use of the paper film for several years by the Department for the mass x-raying of thousands of students in schools and colleges, and sample studies in industry convinced it that industry needed assistance in the detection of active and latent tuberculosis cases among its workers.

This year the Department purchased a Westinghouse condenser discharge machine, using 35 millimeter films, with rotating anode tubes. A Leitz camera with an F 1.5 lens and a magazine holding a 250 roll film is standard equipment on this apparatus. The outfit is transported in a three-quarter-ton delivery truck from plant to plant. Workers can be x-rayed at the rate of one a minute, at extremely low cost. All films are processed in a portable dark room the same day they are exposed and forwarded to the Department for interpretation. The machine also is equipped to take conventional 14 inch by 17 inch films. It is the Department's practice to retake on large films all doubtful or borderline cases.

While the 35 millimeter film is not practical for radiologists in private practice, it is excellent for mass x-raying. Tuberculosis case finding is open to the criticism of not finding the early case. This is justified inasmuch as 80 per cent of the patients when admitted to Virginia's three state sanatoria are beyond the minimal stage of the disease. The introduction of the 35 millimeter film changes the entire program. Formerly, it was hoped that patients would come for an examination. Now, the examination is taken to the patient. This plan represents the only available method to locate the asymptomatic case before it develops into a hopeless advanced condition.

A total of 10,091 workers including the following industries: tobacco industry, explosives, life insurance companies, transportation and communication, steel fabrication and manufacturing, recreation and amusement, and coal mining have been x-rayed by means of paper and 35 millimeter films. Of these .563 per cent had active clinical tuberculosis and 2.11 per cent showed healed lesions. These rates are comparable with other sections of the country with the exception of the tobacco industry. It is believed that the high rate here is due to the large percentage of Negroes employed. All records now are being transferred to punch cards. This will permit a much better analysis and statistical study than is now possible.

Presidents and Places of Meetings of the Medical Society of Virginia

PRESIDENT	PLACE OF MEETING	YEAR OF MEETING
*Dr. James McClurg, Richmond		1821
*Dr. William Foushee, Richmond		1822
*Dr. William Foushee, Richmond		1823
*Dr. James Henderson, Richmond		1824
Meetings Discontinued.		
*Dr. Robert William Haxall, Richmond		1841
*Dr. Robert William Haxall, Richmond		1842
*Dr. Frederick Marx, Richmond		1843
*Dr. Thomas Nelson, Richmond		1844
*Dr. William A Patteson, Richmond		1845
*Dr. William A Patteson, Richmond		1846
*Dr. John A. Cunningham, Richmond		1847
*Dr. William A Patteson, Richmond		1848
		1849
*Dr. Robert William Haxall, Richmond		1850
*Dr. Beverley R. Wellford, Fredericksburg		1851
*Dr. James Beale, Richmond		1852
*Dr. Thomas P. Atkinson, Danville		1853
*Dr. Carter P. Johnson, Richmond		1854
*Dr. H. C. Worsham, Dinwiddie		1855
*Dr. H. C. Worsham, Dinwiddie		1856
*Dr. James Bolton, Richmond		1857
*Dr. Levin S. Joynes, Richmond		1858
Most of these meetings were held in Richmond. Last meeting held in 1859.		
*Dr. R. S. Payne, Lynchburg	Richmond	1870
*Dr. R. S. Payne, Lynchburg	Lynchburg	1871
*Dr. A. M. Fauntleroy, Staunton	Staunton	1872
*Dr. Harvey Black, Blacksburg	Norfolk	1873
*Dr. A. G. Tebault, London Bridge	Abingdon	1874
*Dr. S. C. Gleaves, Wytheville	Richmond	1875
*Dr. F. D. Cunningham, Richmond	Charlottesville	1876
*Dr. J. L. Cabell, University	Petersburg	1877
*Dr. J. H. Claiborne, Petersburg	Richmond	1878
*Dr. L. S. Joynes, Richmond	Alexandria	1879
*Dr. Henry Latham, Lynchburg	Danville	1880
*Dr. Hunter McGuire, Richmond	Old Point Comfort	1881
*Dr. G. W. Semple, Hampton	Fauquier White Sulphur Springs	1882
*Dr. W. D. Cooper, Morrisville	Rockbridge Alum Springs	1883
*Dr. J. E. Chancellor, Charlottesville	Rawley Springs	1884
*Dr. S. K. Jackson, Norfolk	Alleghany Springs	1885
*Dr. Rawley W. Martin, Chatham	Fredericksburg	1886
*Dr. Bedford Brown, Alexandria	Richmond	1887
*Dr. Benjamin Blackford, Lynchburg	Norfolk	1888
*Dr. E. W. Row, Orange C. H.	Roanoke	1889
*Dr. Oscar Wiley, Salem	Rockbridge Alum Springs	1890
*Dr. W. W. Parker, Richmond	Lynchburg	1891
*Dr. H. Grey Latham, Lynchburg	Alleghany Springs	1892
*Dr. Herbert M. Nash, Norfolk	Charlottesville	1893
*Dr. Wm. P. McGuire, Winchester	Richmond	1894
*Dr. Robt. J. Preston, Abingdon	Wytheville	1895
*Dr. Wm. L. Robinson, Danville	Rockbridge Alum Springs	1896
*Dr. Geo. Ben Johnston, Richmond	Hot Springs	1897
*Dr. Lewis E. Harvie, Danville	Virginia Beach	1898
*Dr. Jacob Michaux, Richmond	Richmond	1899
*Dr. Hugh T. Nelson, Charlottesville	Charlottesville	1900
*Dr. J. R. Gildersleeve, Tazewell	Lynchburg	1901
*Dr. R. S. Martin, Stuart	Newport News	1902
*Dr. J. N. Upshur, Richmond	Roanoke	1903
*Dr. Joseph A. Gale, Roanoke	Richmond	1904
*Dr. Wm. S. Christian, Urbanna	Norfolk	1905
Dr. Lomax Gwathmey, Norfolk	Charlottesville	1906
*Dr. Paul B. Barringer, Charlottesville	Chase City	1907
*Dr. Wm. F. Drewry, Petersburg	Richmond	1908
Dr. Stuart McGuire, Richmond	Roanoke	1909
*Dr. E. T. Brady, Abingdon	Norfolk	1910
*Dr. O. C. Wright, Jarratt	Richmond	1911
*Dr. Hugh M. Taylor, Richmond	Norfolk	1912
*Dr. Southgate Leigh, Norfolk	Lynchburg	1913
*Dr. Stephen Harnsberger, Catlett	Washington, D. C.	1914
*Dr. Samuel Lile, Lynchburg	Richmond	1915

XUM

PRESIDENT	PLACE OF MEETING	YEAR OF MEETING
*Dr. Joseph A. White, Richmond	Norfolk	1916
*Dr. Geo. A. Stover, South Boston	Roanoke	1917
*Dr. E. G. Williams, Richmond	Richmond	1919†
*Dr. Paulus A. Irving, Farmville	Petersburg	1920
*Dr. Alfred L. Gray, Richmond	Lynchburg	1921
*Dr. E. C. S. Taliaferro, Norfolk	Norfolk	1922
*Dr. John Staige Davis, University	Roanoke	1923
*Dr. W. W. Chaffin, Pulaski	Staunton	1924
Dr. Hunter H. McGuire, Winchester	Richmond	1925
Dr. W. L. Harris, Norfolk	Norfolk	1926
Dr. J. Shelton Horsley, Richmond	Petersburg	1927
Dr. J. W. Preston, Roanoke	Danville	1928
Dr. J. Bolling Jones, Petersburg	Charlottesville	1929
*Dr. Charles R. Grandy, Norfolk	Norfolk	1930
*Dr. J. Allison Hodges, Richmond	Roanoke	1931
Dr. I. C. Harrison, Danville	Richmond	1932
*Dr. J. C. Flippin, University	Lynchburg	1933
Dr. R. D. Bates, Newtown	Alexandria	1934
Dr. F. H. Smith, Abingdon	Norfolk	1935
Dr. P. St. L. Moncure, Norfolk	Staunton	1936
Dr. J. M. Hutcheson, Richmond	Roanoke	1937
Dr. G. F. Simpson, Purcellville	Danville	1938
Dr. A. F. Robertson, Jr., Staunton	Richmond	1939
Dr. H. H. Trout, Roanoke	White Sulphur Springs, W. Va.	1940
Dr. W. B. Martin, Norfolk	Virginia Beach	1941

*Deceased.
†Owing to influenza epidemic and World War, meeting not held in 1918, and Dr. Williams continued as President.

Military and Naval Section

The following have been added to the list of

Examining Physicians on Local Boards

Dr. William Brown, Ruthville.
Dr. John M. Davis, Paces.
Dr. Charles W. Dorsey, Roanoke.
Dr. C. S. Franklin, Ruthville.
Dr. E. L. Grubbs, Front Royal.
Dr. Paul W. Howle, Richmond.
Dr. O. L. Huffman, Arvonia.
Dr. D. M. Kipps, Front Royal.
Dr. M. M. Lewis (Col.), Richmond.
Dr. J. O. Marcy, Bristol.
Dr. E. Sheridan Roane (Col.), Richmond
Dr. D. B. Stuart, Roanoke.
Dr. L. K. Woodward, Jr., Front Royal.
Dr. Charles M. Irvin, Roanoke.
Dr. W. E. Lynn, Front Royal.

Medical Reserve Officers

The following additional medical reserve corps officers have been ordered to extended active duty by the War Department, Washington, D. C.:

Lieut. John Tallman Jarrett, Richmond.
Lieut. Paul E. Ruuska, Richmond.

The following have been ordered to extended active duty by the Commanding General of the Third Corps Area:

Capt. Joseph John Kanich, Richmond—Ft. Orglethorp, Ga.

Capt. John Kulczycki, Richmond—Camp Blanding, Fla.

Capt. Samuel Harold Malkin, Bedford—Camp Claiborne, La.

Capt. Paul McFarlane, Scottsville—Ft. George G. Meade, Md.

Lieut. John T. B. Ambler, Roanoke—Camp Lee.

Lieut. Edward Phelps Ambrose, Jr., Radford—Camp Lee.

Lieut. Morton M. Gratz, Appomattox—Camp Claiborne, La.

Lieut. Harry H. Henderson, Richmond—Camp Lee.

Lieut. Edward Rattnne, Elkton—Ft. George G. Meade, Md.

Lieut. Solomon Singer, Jonesville—Camp Claiborne, La.

Lieut. William G. Sorrell, Amelia—New Cumberland, Pa.

Lieut. E. Bowie Shepherd of Richmond has been promoted to the rank of Captain, and is at Station Hospital, Ft. Moultrie, S. C.

Lieut. Robert J. Scott, class of '40, Medical College of Virginia, is located at Camp Grant, Ill., where he is assigned to Company "C" of the 31st Medical Training Battalion.

Woman's Auxiliary to the Medical Society of Virginia

President—MRS. GRIFFIN W. HOLLAND, Eastville.
President-Elect—MRS. E. LATANE FLANAGAN, Richmond.
Recording Secretary—MRS. HAROLD W. POTTER, Hilton Village.
Corresponding Secretary—MRS. J. WALKER JACKSON, Machipongo.
Parliamentarian—MRS. JAMES B. STONE, Richmond.
Treasurer—MRS. REUBEN F. SIMMS, Richmond.
Chairman, Press and Publicity—MRS. HENRY M. SNEAD, Petersburg.

Suggestions for State Managers of Circulation of the Bulletin.

DEAR FELLOW WORKERS:

The Woman's Auxiliary has grown until it has a membership of over 27,000. During these critical times when American medicine is confronted with developments which threaten its established principles, it is extremely important that the Woman's Auxiliary conduct its affairs in such manner as to bring no reflection on the ideals of the parent body. To this end the members of our organization as well as the officers and chairmen who manage its affairs should be well informed concerning all plans and policies. They should also keep abreast of the times regarding those questions which are of interest to the medical profession.

The BULLETIN of the Woman's Auxiliary is the official organ of our organization just as is *The Journal of the American Medical Association* for that organization. From now on official programs of standing committees will be printed in the BULLETIN istead of in leaflets as formerly. This plan will eliminate much printing and postage expense. The programs will reach state and county officers at the same time, making it easier for state officers to plan the work with the officers of county Auxiliaries earlier in the summer. All officers will have just one pamphlet for reference instead of several which will also mean greater coordination of effort and less overlapping in planning program activities.

Besides the programs, each issue of the BULLETIN will contain information relative to home defense measures, nutritional education or Pan-American unity. The committee on Press and Publicity promises interesting and valuable material for each issue.

The following instructions may be found helpful in creating interest in the BULLETIN:

1. Ask the county president to appoint a chairman of BULLETIN.
2. Have a table at the annual State meeting where subscriptions may be taken. *(Presidents-Elect should promote this idea).*
3. Request the Editor of the official Auxiliary publication to print the "Important Notice".
4. Request the Chairman of Press and Publicity to include this notice in the Auxiliary notes sent to the State Journal.
5. Request County Chairmen to give a brief review of the post-convention issue of the BULLETIN at the first Auxiliary meeting in the fall.
6. Plan for county chairmen a simple but adequate system of keeping records so that an exact report of new and renewed subscriptions may be sent to the national chairman when desired.
7. Copies of the notice, receipt blanks and other available material will be sent to you upon request.

Your earnest cooperation in the matter of increased circulation of the BULLETIN will be appreciated.

MRS. CHARLES H. WERNER,
Circulation Manager, Auxiliary to the A.M.A.

Important Notice.

Extra copies of the post convention issue of the BULLETIN of the Woman's Auxiliary are available. You may begin your subscription with this issue if you desire. It is an interesting and valuable number, containing four of the major programs of the national Organization which have to do with plans for home defense.

It is the plan of the national board to use the official publication to present all important material to the members of the Woman's Auxiliary. All issues of the Bulletin will contain, therefore, important programs and articles presenting information necessary for the efficient promotion of our Auxiliary projects. Subscribers are entitled to four issues of the Bulletin for one dollar. Please indicate the issue with which you wish your subscription to *start*, and mail at once to Mrs. Charles H. Werner, Circulation Manager, 531 N. 24th Street, St. Joseph, Missouri.

XUM

Book Announcements

Books received for review are promptly acknowledged in this column. In most cases, reviews will be published shortly after the acknowledgment of receipt. However, we assume no obligation in return for the courtesy of those sending us the same.

The Care of the Aged. (Geriatrics) By MALFORD W. THEWLIS, M.D., Attending Specialist, General Medicine, United States Public Health Hospitals, New York City; Attending Physician, South County Hospital, Wakefield, R. I.; etc. Third Edition. Entirely Rewritten. St. Louis. The C. V. Mosby Company. 1941. Octavo of 579 pages. With 50 illustrations. Cloth. Price $6.00.

Body Mechanics in Health and Disease. By JOEL E. GOLDTHWAIT, M.D., F. A. C. S., LL.D.; LLOYD T. BROWN, M.D., F.A.C.S.; LORING T. SWAIM, M.D.; JOHN G. KUHNS, M.D.,F.A.C.S. With a Chapter on the Heart and Circulation as Related to Body Mechanics by WILLIAM J. KERR, M.D., F.A.C.P. Philadelphia. J. B. Lippincott Company. 1941. Third Edition. Completely Revised and Reset. Octavo of xiv-316 pages. 121 Illustrations. Cloth. Price $5.00.

Necropsy. A Guide for Students of Anatomic Pathology. By BELA HALPERT, M.D., Assistant Professor of Pathology and Bacteriology, Louisiana State University School of Medicine, and Visiting Pathologist, Charity Hospital of Louisiana at New Orleans. St. Louis. The C. V. Mosby Company. 1941. 75 pages. Cloth. Price $1.50.

Manual of the Diseases of the Eye. For Students and General Practitioners. By CHARLES H. MAY, M.D., Consulting Ophthalmologist to Bellevue, Mt. Sinai and French Hospitals, New York; etc. Seventeenth Edition, Revised with the Assistance of CHARLES A. PERERA, M.D., Associate in Ophthalmology, College of Physicians and Surgeons, Medical Department of Columbia University, New York; etc. Baltimore, William Wood and Company. 1941. viii-519 pages. With 387 Illustrations including 32 Color Plates, with 93 Colored Figures. Cloth. Price $4.00.

Microbes Which Help Or Destroy Us. By PAUL W. ALLEN, Ph.D., Professor of Bacteriology and Head of the Department University of Tennessee; D. FRANK HOLTMAN, Ph.D., Associate Professor of Bacteriology, University of Tennessee; and LOUISE ALLEN McBEE, M.S., Formerly Assistant in Bacteriology, University of Tennessee. St. Louis. The C. V. Mosby Company. 1941. 540 pages. With 102 text illustrations and 13 color plates. Cloth. Price $3.50.

Essentials of General Surgery. By WALLACE P. RITCHIE, M.D., Clinical Assistant Professor, Department of Surgery, University of Minnesota Medical School. St. Louis. The C. V. Mosby Company. 813 pages. With 237 illustrations. Cloth. Price $8.50.

The Complete Weight Reducer. By C. J. Gerling. Harvest House. New York. 1941. Octavo of 246 pages. Cloth. Price $3.00.

Cardiac Clinics. A Mayo Clinic Monography. By FREDERICK A. WILLIUS, B.S., M.D., M.S. in Med., Head of Section of Cardiology, Mayo Clinic and Professor of Medicine, Mayo Foundation for Medical Education and Research, Graduate School University of Minnesota, Rochester. St. Louis. The C. V. Mosby Company. 1941. 276 pages. Illustrated. Cloth. Price $4.00.

Synopsis of Applied Pathological Chemistry. By JEROME E. ANDES, M.S., Ph.D., M.D., F.A.C.P., Director of Department of Health and Medical Advisor, University of Arizona, Tucson; etc. And A. G. EATON, B.S., M.A., Ph.D., Assistant Professor of Physiology, Louisiana State University School of Medicine, New Orleans. St. Louis. The C. V. Mosby Company. 1941. 428 pages. With 23 illustrations. Cloth. Price $4.00.

Handbook of Communicable Diseases. By FRANK H. TOP, A.B., M.D., M.P.H., Director, Division of Communicable Diseases and Epidemiology, Herman Kiefer Hospital and Detroit Department of Health; Associate Professor of Preventive Medicine and Public Health, Wayne University, College of Medicine; etc. And Collaborators. St. Louis. The C. V. Mosby Company. 1941. 682 pages. With 73 text illustrations and 10 color plates. Cloth. Price $7.50.

The March of Medicine. New York Academy of Medicine Lectures to the Laity, 1940. Columbia University Press. New York. 1941. xii-154 pages. Cloth. Price $2.00.

This book is the fifth of a series of lectures sponsored by the New York Academy of Medicine and presented to the laity. They are presented to give the public an appreciation of the background of advances being made in many fields of medicine.

Six lectures are included in the series. Perrin Long traces the fascinating history of the sulfonamide drugs from the suggestion of Fritz Mietzach, of the German Dye Trust that prontosil be tried experimentally in bacterial infections to 1940. Two lectures deal with psychiatry. Abraham Myerson discusses the inheritance factor in various types of mental disease. In "The Ascent from Bedlam", Richard Hutchings traces evolution of our ideas concerning insanity and with it the development of institutions for care of the insane. The story of our knowledge of the blood is traced by Paul Reznikoff from the time of Goethe, when all that could be said was that, "Blood is indeed a peculiar fluid". In the story of the viruses the ever-inspiring story of the conquest of yellow fever is retold by Thomas Rivers. Chevalier Jackson presents the romance of bronchoscopy in the final lecture.

Though written for the laity, these subjects are presented in such a fashion as to make two hours interesting reading for the medical profession.

L. T. STONEBURNER, III.

VIRGINIA MEDICAL MONTHLY

Official Publication of the Medical Society of Virginia

(Founded by Landon B. Edwards, M. D., April, 1874)

WYNDHAM B. BLANTON, M. D.
Editor

AGNES V. EDWARDS
Business Manager

PUBLICATION COMMITTEE

WYNDHAM B. BLANTON, M. D., Richmond, *Chairman*
J. EDWIN WOOD, JR., M. D., University
H. S. DANIEL, M. D., Louisa

All correspondence regarding editorial matter, original articles, and policy should be directed to the Editor. Questions relating to subscription rates, advertising, etc., should be addressed to the Business Manager, 1200 East Clay Street, Richmond, Virginia. The MONTHLY is not responsible for the opinions and statements of its contributors. All advertisements are accepted subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association. Annual Subscription, $2.00. Single Copies, 25c.

VOL. 68. OCTOBER, 1941. No. 10

Editorial

In Search of Colonial Medicine in Williamsburg

THE Williamsburg Restoration has been carried out in the grand manner. Virginia is proud of Mr. Rockefeller's gift to the State in restoring and preserving its heritage. There is every evidence to show that the work of reproducing the colonial capital has been done as the result of instructions to spare no expense and no pains. No one questions the vastness of the undertaking nor its accuracy in the smallest detail. So much has been given the citizens of Virginia that we should hesitate to ask for more were our request not a testimony to our appreciation of the little city's value to our present-day living and teaching.

We all know that there were three great professions honored and respected by our forefathers of the Williamsburg period: the Law, the Ministry and Medicine. One does not have to go far in Williamsburg today to be convinced of the power and prestige of the law in the Eighteenth Century. The capitol where the law was made, the courthouse where the law was enforced, the public goal and stocks where the law-breaker was punished, as well as the home of one of the law's great champions, George Wythe, are all proudly shown the Williamsburg visitor. The church of colonial days is beautifully and adequately revealed in the restored Bruton Parish Church and its quiet graveyard.

What would the visitor to Williasmburg be shown if he asked to see those things that reflect the medicine of this by-gone day? He would, no doubt, be told that the Eastern State Hospital on the outskirts of the city—for the removal of which to more distant parts there has naturally been considerable agitation—is the oldest institution devoted to the care of mental disease in the United States, and that here, too, the treatment of the colored insane was first provided for. He would be shown the cottage of James Galt, the first keeper of the asylum, which now stands on Duke of Gloucester Street to which it was removed in 1929.

Some of Williamsburg's leading citizens and landowners were physicians: John Amson, Andrew and Robert Anderson, Philip Barraud, Archibald Blair, Charles and John Brown, James and William Carter, Robert Davidson, John Dixon, James and John Galt, Robert Garrett, the George Gilmers (father and son), Samuel Griffin, Peter Hay, Kenneth Mackenzie, Robert Nicholson, William Pasteur, George Pitt and Robert Waller—to recall a few; but while their names linger on in the records, for the most part the places where they dwelt know them no more.

The medical man in search of medical items of interest in colonial Williamsburg would be interested to know that the Raleigh Tavern was built by the physician, Archibald Blair, and that it was later owned by another physician, Dr. George Gilmer. When he is shown the Wren Building at William and Mary College, the medical visitor would like to be told that here James McClurg, graduate of Edinburgh, later first Mayor of Richmond, first president of the Medical Society of Virginia, and a member of the Constitutional Convention, gave the first formal lectures in medicine ever delivered to students in this State.

The doctor who visits the restored Capitol and Palace and the grounds of William and Mary College should be told something about their medical history. Williamsburg was one of the most important Revolutionary hospital centers, especially towards the end of the war and during the Yorktown campaign. He might be told about the Vineyard Hospital which stood on the York Road just outside of the city and that the Capitol, the Palace and the College housed the sick and wounded of the Continental Army. The Restoration undoubtedly wishes they had not, for if it had not been for the fact that Revolutionary hospitals were set up in these old buildings, the Restoration's work would have been much simpler than it proved to be. Careless Revolutionary soldiers were responsible for the burning of the Palace in 1781, and for the destruction by fire of the College President's House and one of the wings of the College. In the Civil War, the Court House, the Baptist Church, Bruton Parish Church and many private dwellings were converted into temporary hospitals, and the main building of the College was used for a hospital in 1861 by Confederate troops and in 1862 by Federal troops.

The medical minded visitor, especially if he has seen the Hugh Mercer apothecary shop in Fredericksburg, the Leadbetter Shop in Alexandria, or that unique preservation of the apothecary's art at the Medical College of Virginia in Richmond, will naturally hope to be shown an apothecary shop in Williamsburg. Williamsburg of this period was not without its apothecary shops. There were many. There was Andrew Anderson's *Sign of the Golden Ball* and James Carter's *Unicorn's Horn* and George Pitt's *Sign of the Rhinoceras* as well as other shops—names have not been preserved if they ever boasted names—which were operated by William Biers, William Carter, Richard Couthard, Robert Davidson, John Galt, the two Gilmers, Peter Hay, and William Pasteur.

Dr. Archibald Blair's shop, dating from 1717, has been restored. It is the oldest apothecary shop in the State. Unfortunately, the interior has not been restored, but has been diverted to other uses. Where once the colorful carboys, brass scales, pounding mortars, bottles large and small, and pungent odors conspired to create an atmosphere that was part of the medicine of its day, a peruker, plying a trade equally quaint to us, makes and repairs the wigs worn by the costumed hostesses, guides and servitors of the Restoration. No doubt the corporation will change all this in time. Until that day one must be content to look upon the exterior of Blair's old establishment while reconstructing in his mind, as best he can, its interior.

It is at this point that medicine in Virginia, conscious of its debt to the Rockefeller Restoration, must, like a greedy child to whom much has been given, hold out its hands for more. Our profession is at the cross roads of its destiny and it must plead for the preservation of every visible sign of its olden days, that it may know what it has been in order to know what it should be, that it may learn what to hold fast and what to let go.

News Notes

ANNUAL MEETING MEDICAL SOCIETY OF VIRGINIA

Virginia Beach

October 6, 7 and 8, 1941

℞ **Scientific Program**
Exhibits—3 kinds
Entertainment
Mix and take all every day.

Prognosis: Excellent.

Medical College of Virginia News.

Convocation exercises opening the one hundred fourth session of the college were held at 12 noon, September 15, at the Monumental Church. President Sanger presided and talks were made by the four deans, the secretary-treasurer, the president of th student body, and the president of the college Y. M. C. A. Reverend George Ossman, rector of the church, gave the invocation and benediction.

Dr. Lewis E. Jarrett, director of the hospital division, attended the annual meeting of the American Hospital Association, September 13-17, in Atlantic City.

The United States Public Health Service has made a grant of $3,000.00 for the Saint Philip school of nursing and $12,350.00 for the college school of nursing.

The Crockett Memorial Laboratory was dedicated with appropriate exercises on the afternoon of September 15 at three o'clock. This laboratory was made possible by gifts from friends and former students of the late Doctor Crockett, the pharmacy profession at large, and others. This laboratory will be used by junior and senior students of the school of pharmacy.

Dr. Thomas D. Rowe received his doctorate during the summer and has been made associate professor of pharmacy to succeed the late Dr. W. G. Crockett as head of the department.

Dr. Ralph A. Logan, Dr. Philip Modjeski, and Dr. E. P. Ferrari have joined the faculty of the dental school.

Dr. Ann T. Swing has been appointed B. Armistead Shepherd fellow in immunology for the current session.

The second symposium on industrial health was held at the college, September 10-12. The number in attendance exceeded last year and the meetings were most enthusiastic. Outstanding speakers from far and near were gathered for this program. It is hoped that this important feature of the work of the college may be continued.

It is expected that the superb piece of statuary given the institution by Mrs. Anna Hyatt Huntington, distinguished sculptress, will be received around October 5; the setting for the group, designed by Mr. Charles F. Gillette, Richmond landscape architect, is practically completed.

Dr. John M. Meredith has been appointed associate professor of neurological surgery, replacing Dr. W. Gayle Crutchfield, resigned. Doctor Crutchfield has accepted the professorship of neurological surgery at the University of Virginia.

University Post-Graduate Clinic.

The Post-Graduate Clinic will be held at the University of Virginia Hospital on December 2, 3, 4 and 5. The first two days will be devoted to Ophthalmology and among the speakers will be Dr. Reese of New York and Dr. Gradle of Chicago. The last two days will be given to Otolaryngology with Dr. Clerf and Dr. Houser of Philadelphia appearing on the program along with Dr. Lehman and Dr. Landis of the University of Virginia. The completed program will be ready in November.

Duke University Symposium.

The Duke University School of Medicine and Duke Hospital, Durham, N. C., will conduct its annual symposium on October 16-18, the subject being "Problems of Civil and Military Emergencies". A

program presented by nationally known authorities on their subjects has been arranged. Emergency treatments, bone and joint surgery, injury of the nervous system, nutrition problems during crisis, epidemics, the use of new drugs such as sulfonamides, and defense problems will be discussed. The committee in charge of the program is headed by Dr. Lenox D. Baker.

In order for the visiting doctors to meet the speakers and to have a social evening together, a buffet dinner is to be given on Friday evening. The meeting will be closed with the Colgate-Duke football game for which seats may be obtained in a special section reserved for doctors registered at the symposium, by making application direct to the Duke Athletic Association prior to October 11.

A cordial invitation is extended the members of the medical profession to attend this symposium.

Dr. J. R. Chitwood,

Formerly of Ivanhoe and Wytheville, who recently completed a two-year residency in medicine, obstetrics and pediatrics at the City Hospital, Winston-Salem, N. C., is now located for general practice at Rainelle, W. Va.

Dr. Thornton Kell,

Recently of Bluefield, has located at Grundy.

Respirators or "Iron Lungs" Listed.

The National Foundation for Infantile Paralysis, Inc., 120 Broadway, New York City, has issued a pamphlet which lists adult cabinet type respirators or "Iron Lungs" which have been approved by the Council on Physical Therapy of the American Medical Association. There are 852 of these listed in the United States, the following being in Virginia:

Charlottesville—University of Virginia Hospital.
Clifton Forge—Chesapeake and Ohio Hospital.
Covington—First Aid Crewe.
Lexington—T. K. I. Fraternity.
Lynchburg—Lynchburg General Hospital.
Martinsville—Shackelford Hospital.
Newport News—Riverside Hospital.
Norfolk—Hospital St. Vincent de Paul.
Portsmouth—Portsmouth Central Labor Union.
Pulaski—Pulaski Hospital.
Richmond—Medical College of Virginia Hospital.
Roanoke—Roanoke Life Saving Square.
Salem—First Aid Crewe.

Dr. C. E. Holderby,

Formerly of Williamsburg, has located in Newport News with offices in the Masonic Temple.

Dr. O. L. Huffman,

Class of '38, Medical College of Virginia, who has recently been practicing at Sugar Grove, W. Va., is now located at Arvonia where he will be engaged in general practice.

Dr. C. M. Caravati

Will return to Richmond during October to engage in the practice of gastro-enterology, after being at the Johns-Hopkins Clinic for the past six months.

American Association of Obstetricians, Gynecologists, and Abdominal Surgeons.

At the annual meeting of this Association held at the Homestead, Hot Springs, September 11-13, Dr. Grandison D. Royston, St. Louis, succeeded Dr. Fred H. Falls of Chicago as president; Dr. Willard R. Cooke, Galveston, was named president-elect, and Dr. W. A. Scott, Toronto, was re-elected secretary-treasurer. The next meeting will be held at White Sulphur Springs, W. Va., the second week in September, 1942.

"Depression or No Depression, War or No War."

Since 1930, month after month, a unique series of educational-to-the public advertisements have appeared on the first page of *Hygeia*. The sponsor's name, Mead Johnson & Company, has to be looked for with a magnifying glass, and appears only for copyright purposes. Not a product is ballyhooed. Instead, appears good, clean, convincing reasons, with choice illustrations, why mothers should seek pediatric advice *from their physicians.*

Forum on Allergy.

The fourth annual forum on Allergy will be held in Detroit on January 10 and 11, 1942.

The American Colleges of Physicians

Announces its twenty-sixth annual session will be held in St. Paul, Minn., on April 20-24, 1942. Dr. Roger I. Lee, Boston, is President of the College and will be in charge of the program of general sessions and lectures. Dr. John A. Lepak, of St. Paul, has been appointed general chairman. Mr. E. R. Loveland, Philadelphia, is executive secretary of the College.

American Conference on Industrial Health.

Under the auspices of the American Association of Industrial Physicians and Surgeons, the American Conference on Industrial Health will hold its

second annual meeting on November 5th and 6th at Chicago.

Petrolagar—Now Petrogalar.

A change in the spelling of the name "Petrolagar" to "Petrogalar" has been announced by the Petrolagar Laboratories. The change is being made in both the product name and corporate name.

Company officials, while pointing out that the adoption of the new spelling does not affect the formula or quality of the product in any way, said that they considered the change advisable to avoid any possible misconception as to the nature of the product, "Because it has never been the intention of the company to imply that agar-agar was used for any other purpose than as an emulsifying agent, the last syllable of the former name has been altered in favor of the new spelling".

Officials emphasized that no change has been made in the size of the package, price, or formulae and that each of the five different types of the product will carry the new spelling "Petrogalar". The new corporate names is: Petrogalar Laboratories, Inc., and the address remains, 8134 McCormick Boulevard, Chicago, Illinois.

Dr. Hawes Campbell, Jr.,

For sometime of Hanover, has moved to Gary, W. Va., where he is associated with the United States Steel Corporation.

Dr. and Mrs. A. D. Parsons

And daughter of Richlands spent their vacation at Wrightsville Beach, N. C. With them were Dr. E. S. Parsons and family of South Boston and Dr. and Mrs. George W. Parsons, now of Texarkana, Arkansas-Texas.

Married.

Dr. James Mercer Moss, class of '41, University of Virginia, and Miss Rachel Scott Bybee of Charlottesville, September 6. Dr. Moss, formerly of Arlington, is now serving an internship at the University of Virginia Hospital.

British RAF Psychiatrist to Lecture in United States.

One of England's foremost specialists in psychiatry and neurology, Dr. R. D. Gillespie, has been granted a leave of absence from the RAF by the British Government to report to the American medical profession his first-hand observations on the psychological effects of "blitz" warfare on armed forces and civilian population.

Dr. Gillespie, who is now chief psychiatrist for the British Royal Air Force, is coming to this country at the request of the Salmon Committee on Psychiatry and Mental Hygiene of the New York Academy of Medicine. He will deliver the Salmon Memorial Lecture in the New York Academy building November 17, 18 and 19, speaking on "Psychoneuroses from the Standpoint of War Experience".

The New York lectures will be followed by addresses before the Chicago Neurological Society, the Chicago Institute of Medicine and the Illinois Psychiatric Society in Chicago. Dates for these lectures as well as lectures in Toronto, Ontario and San Francisco, California, will be announced later.

Dr. Charles Burlingame, chairman of the Salmon Committee which each year chooses an outstanding specialist in psychiatry, neurology or mental hygiene for the Salmon Memorial Lecture, has issued a general invitation on behalf of the committee to members of the medical profession and their friends to attend.

Dr. D. F. Love,

Formerly of Harman in Buchanan County, is now located at New Market.

Dr. W. A. Mitchell,

University of Virginia, Class of '38, has opened offices at 33rd and West Avenue, Newport News, where he will limit his practice to pediatrics. He has recently completed a two-year residency at the Medical College of Virginia Hospitals.

Dr. Horsley Honored.

At the meeting of the American Association for the Study of Neoplastic Diseases in Washington, September 4-6, a banquet in honor of Dr. J. Shelton Horsley, Richmond, was held on the 5th. Dr. Roscoe W. Teahan of Philadelphia, President of the Association, was the toastmaster, and there were about sixty-five present at the banquet. Speeches were made by Dr. Louisa T. Keasbey, Pathologist at the Lancaster General Hospital, Lancaster, Pennsylvania; Dr. Harvey E. Jordan, Dean of Medicine at the University of Virginia; Dr. I. A. Bigger, Professor of Surgery at the Medical College of Virginia; Dr. Harry Kerr, Surgeon at the Garfield Hospital in Washington; and by the President of the Washington Medical Society and President of the Washington Pathological Society.

XUM

Dr. William C. Moomaw,

Formerly of Port Chester, N. Y., has returned to Virginia and is now in Bedford where he will limit his practice to eye, ear, nose and throat.

Association of Military Surgeons of the United States.

The annual meeting of this Association, is to be held in Louisville, Ky., October 29 to November 1, with headquarters at the Brown Hotel. Because of the many changes in war medicine and surgery in the past few years, and even months, and the interest in all things pertaining to military matters, this meeting promises to be of unusual importance. The session concludes with a mass review of Military Medicine and an inspection of Fort Knox.

All members of the medical profession are invited and it is particularly hoped that as many members of the Medical Defense Committees as possible will arrange to attend.

Dr. P. W. Miles

Of Danville has been elected chairman of the Recreation Commission of that city.

Dr. Eugene M. Landis,

Professor of Internal Medicine at the University of Virginia, was the guest speaker at the meeting of the Medical Society of Northern Virginia in Winchester, on September the 9th, his subject being "Practical Aspects of Kidney Function Tests".

Dr. Edwin F. Gouldman,

Colonial Beach, after a nine months' graduate course in obstetrics and gynecology at the New York Medical College, is now serving as assistant resident in obstetrics and gynecology in Flower and Fifth Avenue Hospitals, New York City.

Dr. Charles W. Robertson,

Recently of Massachusetts, has located at Alberta and taken over the practice of the late Dr. L. A. Law.

Obituary Record

Dr. Samuel Meredith Wilson, M-1907

Prominent Lynchburg pediatrician, died September the 14th, at the age of fifty-six. He was a native of Petersburg and graduated from the former University College of Medicine, Richmond, in 1907, later taking post-graduate work at Harvard and Johns Hopkins. After a short time in West Virginia, he located in Lynchburg where he had been for the past thirty years. He was a member of the Medical Society of Virginia and of a number of other organizations. His wife and a daughter survive him.

Dr. William Witmer Kerns, M-96

Well-known physician of Bloxom, died August 28. He was a native of Gloucester County and seventy years of age. Dr. Kerns graduated from the former University College of Medicine, Richmond, in 1896. He was active in the civic affairs of Bloxom and was a past president of the Accomac County Medical Society. Dr. Kerns joined the Medical Society of Virginia in 1897. Two sons survive him.

Dr. Bolivar Buchanan McCutchan, M-93

Clifton Forge, died September 9, after a short illness. He was born in 1871 and graduated from the former University College of Medicine, Richmond, in 1895. Dr. McCutchan practiced for a short time in Pittsylvania County but located at Clifton Forge in 1903. He had been a member of the Medical Society of Virginia forty-two years. His wife and three children survive him.

Dr. Wiley Aven Preston, M-41

Abingdon, died August 27, after an illness of several months. He was thirty-seven years of age and graduated from the Medical College of Virginia in June of this year. His wife survives him.

Dr. Miles Parker Omohundro,

Washington, D. C., died July the 28th, at the age of forty-five years. He was born at Montross, Va., and, upon completion of his academic work at William and Mary College, entered the University of Virginia, from which he graduated in medicine in 1922. Later, he obtained a fellowship in urology at the Mayo Clinic, following which he located in Washington, to practice this specialty. His wife and a daughter survive him.